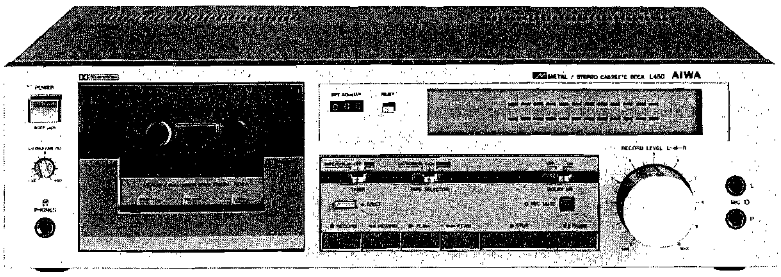
STEREO CASSETTE DECK

MODEL NO. AD-L450H,U,E,K

AIWA®

[SERVICE MANUAL]

Code No. 04-450-000-54



DATE OF ISSUE 6/1980

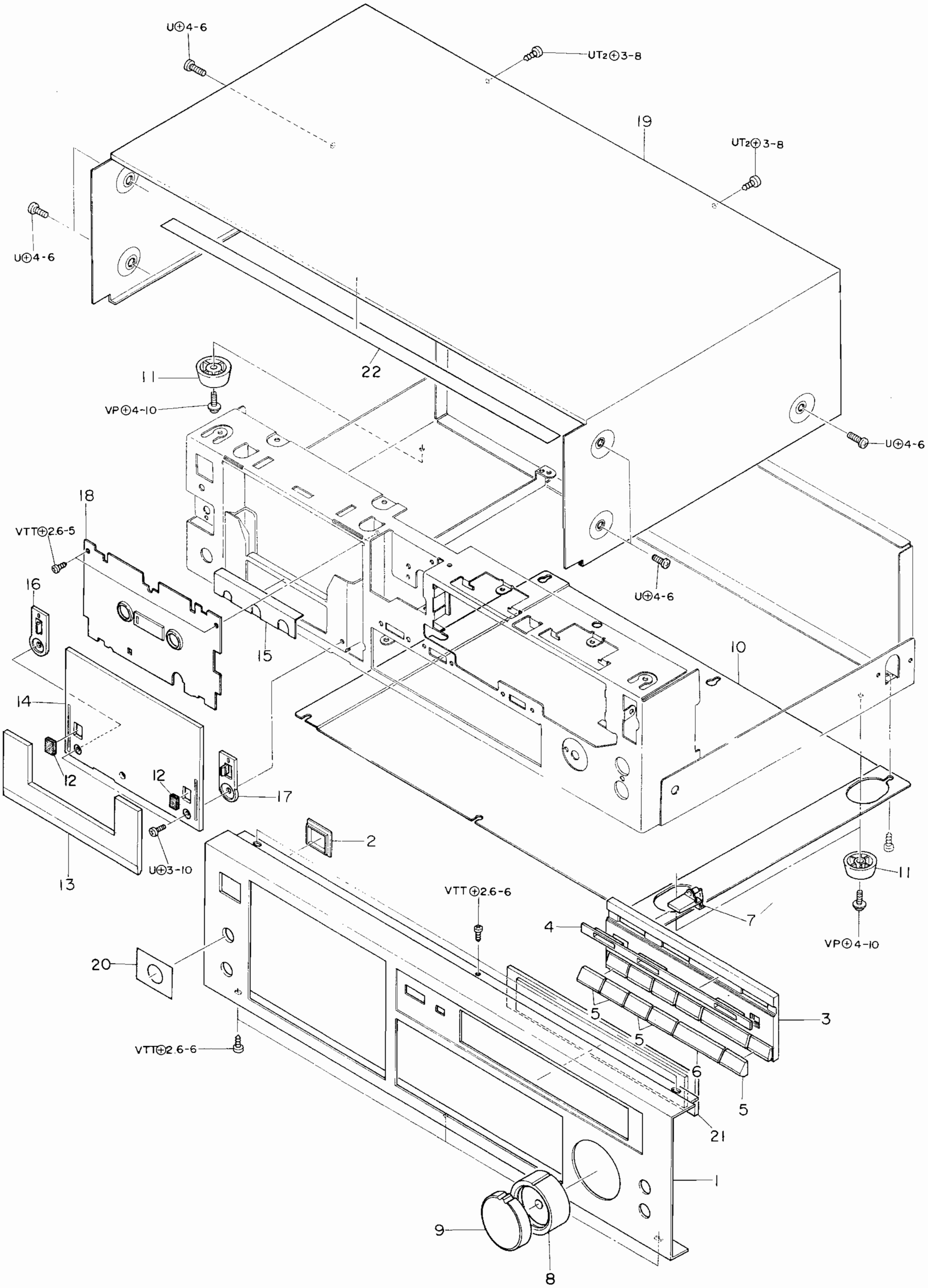
SPECIFICATIONS

Semiconductors:	H,U model 11 IC's, 77 transistors, 44 diodes, 27 LED's E,K model 11 IC's, 81 transistors, 45 diodes, 27 LED's
Power supply:	H model AC 120V/220V/240V switchable 50/60 Hz U model AC 120V, 60 Hz E model AC 120V/220V switchable 50/60Hz K model AC 120V/240V switchable 50/60Hz
Power consumption:	H,U model 20W E,K model 22W
Dimensions:	420(W) x 120(H) x 279(D) mm [16-5/8"(W) x 4-3/4"(H) x 11"(D)]
Weight:	5.2kg (11.5 lbs.)
Track type:	4 tracks 2 channel
Tape speed:	4.76 cm/s (1-7/8 ips) ± 1.5%
Wow and flutter:	Less than 0.04% (WRMS)
Automatic stop system:	Full auto stop
Automatic shut-off action time:	3 ± 1 s.
Pinch roller pressure:	350 ± 30 g (3.43 ± 0.29N)
Tak-up torque:	50 ± 10g-cm (490 ± 98 mN·m)
FF & rewind time:	90 s. (C-60)
Play back output: (TTA-161)	0.58 ± 0.05V (LINE)
Play back noise:	Less than 1.5 mV (METAL, CrO_2, DOLBY NR ON) Less than 2.5 mV (LH DOLBY NR OFF)
Rec./PB output: (TTA-119G)	0 VU ± 1.5 dB (LINE)
Rec./Pb distortion:	Less than 1.5% (METAL) Less than 2.5% (CrO_2) Less than 1.5% (LH)

Rec./Pb SN ratio: (1 kHz, Unweighted)	More than 45/45 dB (METAL, DOLBY NR OFF/ON) More than 45/45 dB (CrO_2, DOLBY NR OFF/ON) More than 42/43 dB (LH, DOLBY NR OFF/ON)	
Channel separation: (1 kHz, 0 VU)	More than 30 dB	
Cross talk; (1 kHz, 0 VU)	More than 60 dB	
Erasing ratio: (400 Hz, 0 VU, +10 dB)	More than 60 dB	
Bias frequency:	85 kHz	
Frequency response:	METAL	20 ~ 17,000 Hz
	CrO_2	20 ~ 17,000 Hz
	LH	20 ~ 15,000 Hz
Motor:	DC servo motor (capstan) DC motor (reel)	
Inputs:	MIC	max. sensitivity 0.3 mV (200 Ω ~ 10 kΩ suitable)
	LINE IN	max. sensitivity 50 mV (Optimum load impedance more than 50 kΩ)
	DIN	max. sensitivity 0.1 mV/kΩ (2.7kΩ)
Outputs:	LINE OUT	Standard level 0.41 V (0 VU) (Optimum load impedance more than 50 kΩ)
	PHONES	8Ω

- Specifications and external appearance are subject to change without due to product improvement.
- Dolby Noise Reduction System is licensed from Dolby Laboratories.
- The name "Dolby" and DD symbol are trademarks of Dolby Laboratories.

EXPLODED VIEW–1


U⊕4-6
UT2⊕3-8
19
UT2⊕3-8
U⊕4-6
22
11
VP⊕4-10
U⊕4-6
18
VTT⊕2.6-5
16
15
U⊕4-6
10
14
12
12
17
13
U⊕3-10
2
VTT⊕2.6-6
11
7
4
VP⊕4-10
20
5
5
3
6
5
VTT⊕2.6-6
21
1
9
8

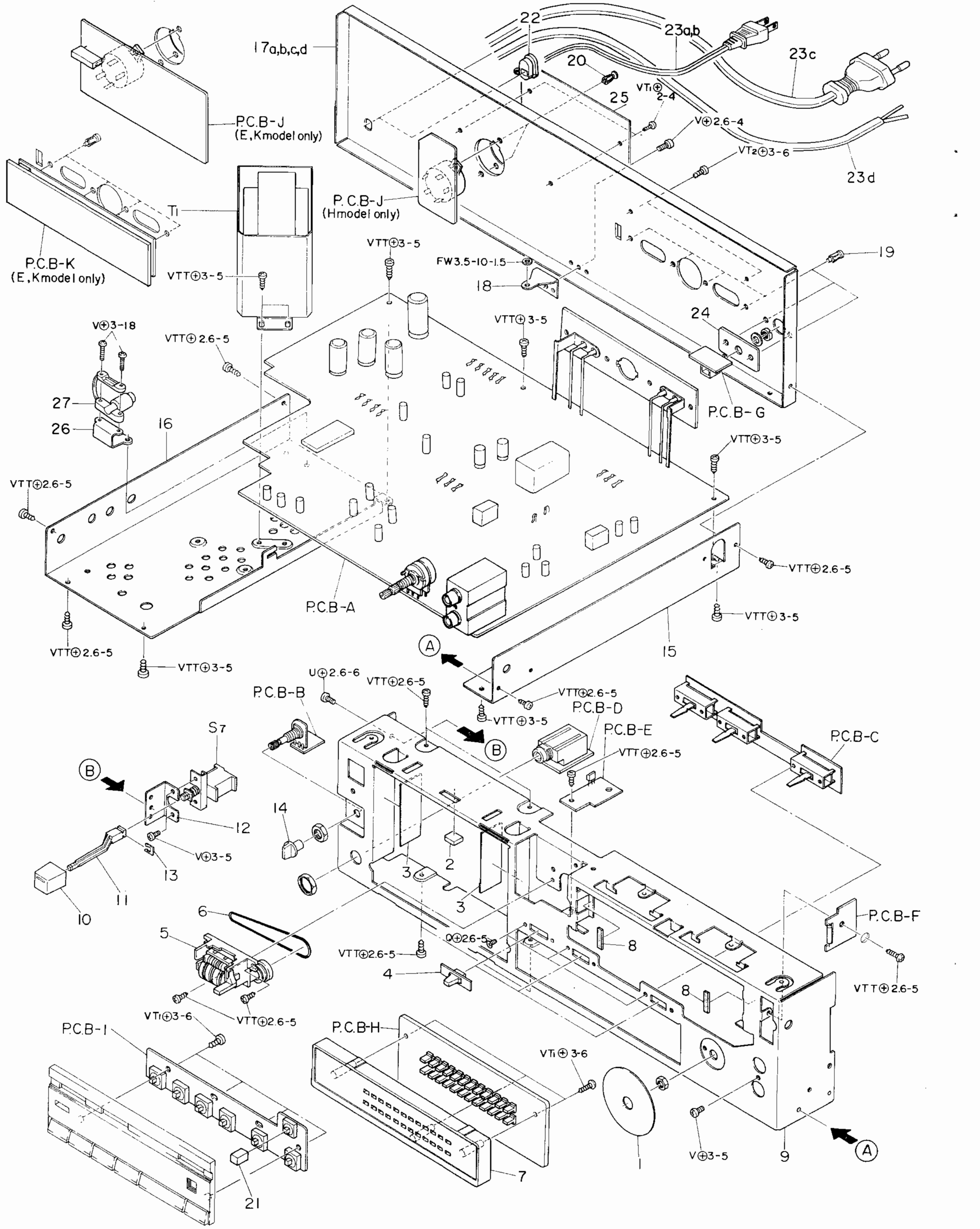
PARTS LIST

MECHANICAL PARTS

- * mark in this part list shows exclusive part (which is used) for only Model No. AD-L450.

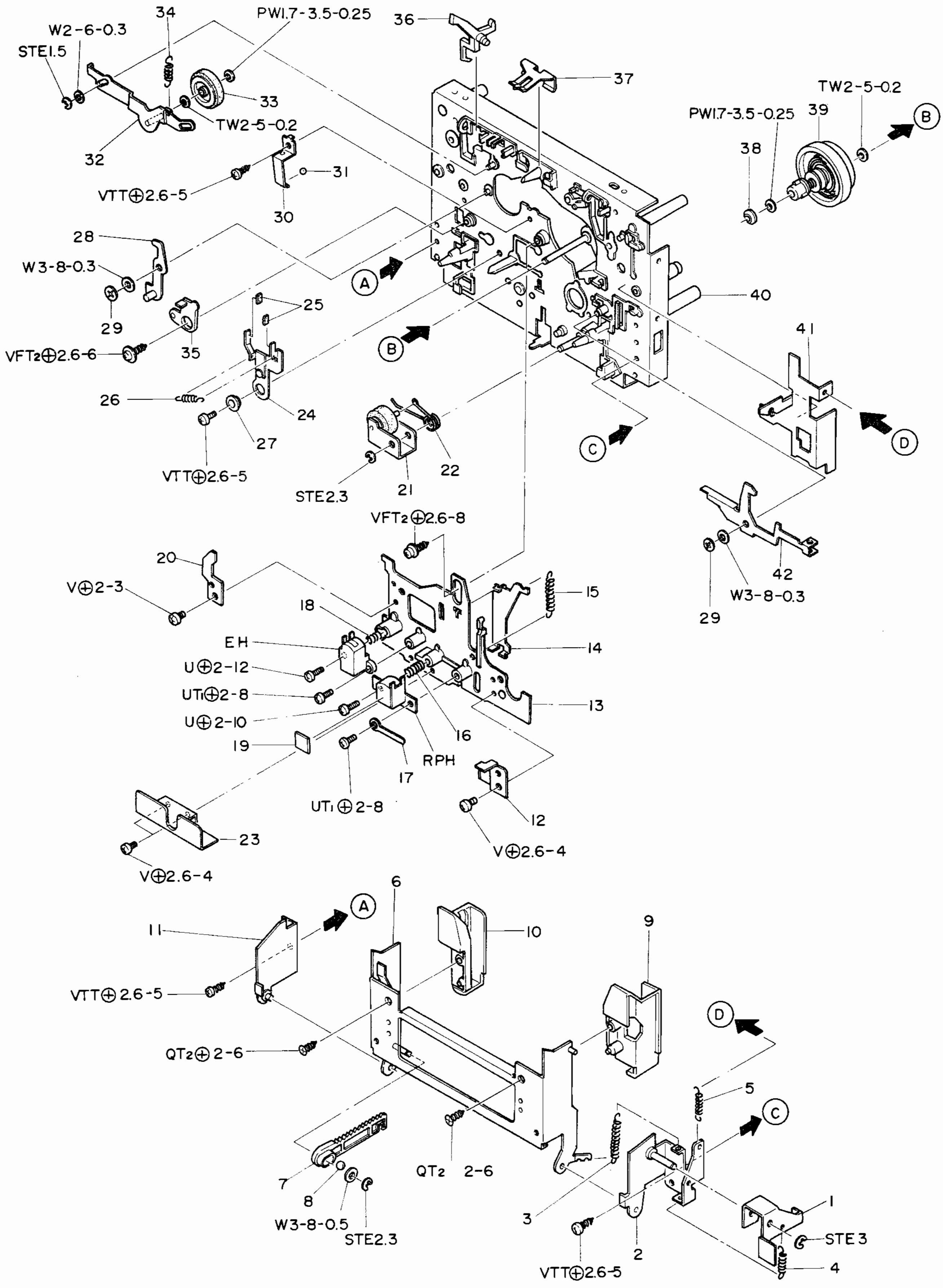
Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty	
1-1	82-160-019-01		Panel, Front	*	1	
1-2	82-318-014-01		Guide, Power button		1	
1-3	82-160-005-01		Panel, Control	*	1	
1-4	82-160-006-01		Guide, Slide switch	*	1	
1-5	82-155-024-01		Touch-key (PLAY)		5	
1-6	82-155-025-01		Touch-key (STOP)		1	
1-7	82-160-014-01		Knob, Eject	*	1	
1-8	82-160-011-01		Knob REC B ass'y	*	1	
1-9	82-160-008-01		Knob REC A ass'y	*	1	
1-10	82-160-002-01		Cabinet, Bottom	*	1	
1-11	87-085-161-01		Foot		1	
1-12	82-117-347-01		Cushion B career		2	
1-13	82-160-016-01		Cassette lid	*	1	
1-14	82-160-017-01		Window, Cassette	*	1	
1-15	82-160-007-01		Plate, Head	*	1	
1-16	82-160-209-01		Holder L, Cassette lid	*	1	
1-17	82-160-210-01		Holder R, Cassette lid	*	1	
1-18	82-157-008-01		Cassette plate	SD-L50	1	
1-19	82-160-001-01		Cabinet, Steel	*	1	
1-20	82-160-042-01		Sheet, Bias instruction	*	1	
1-21	82-160-033-01		Window, Meter	*	1	
1-22	82-160-219-01		Himeron cloth, Cabinet	*	1	

EXPLODED VIEW–2


P.C.B-J
(E, K model only)
17a,b,c,d
22
23a,b
20
23c
25
VT1⊕2-4
V⊕2.6-4
VT2⊕3-6
23d
T1
P.C.B-J
(H model only)
P.C.B-K
(E, K model only)
VTT⊕3-5
VTT⊕3-5
FW3.5-10-1.5
18
19
24
VTT⊕3-5
V⊕3-18
VTT⊕2.6-5
27
26
16
P.C.B-G
VTT⊕3-5
VTT⊕2.6-5
VTT⊕2.6-5
VTT⊕3-5
P.C.B-A
VTT⊕2.6-5
VTT⊕3-5
15
A
U⊕2.6-6
VTT⊕2.6-5
P.C.B-B
VTT⊕2.6-5
VTT⊕3-5
P.C.B-D
P.C.B-E
VTT⊕2.6-5
P.C.B-C
S7
B
B
12
14
V⊕3-5
13
2
3
3
10
11
6
5
O⊕2.6-5
VTT⊕2.6-5
8
P.C.B-F
VTT⊕2.6-5
4
8
VTT⊕2.6-5
VT1⊕3-6
P.C.B-I
P.C.B-H
VT1⊕3-6
V⊕3-5
9
A
1
7
21

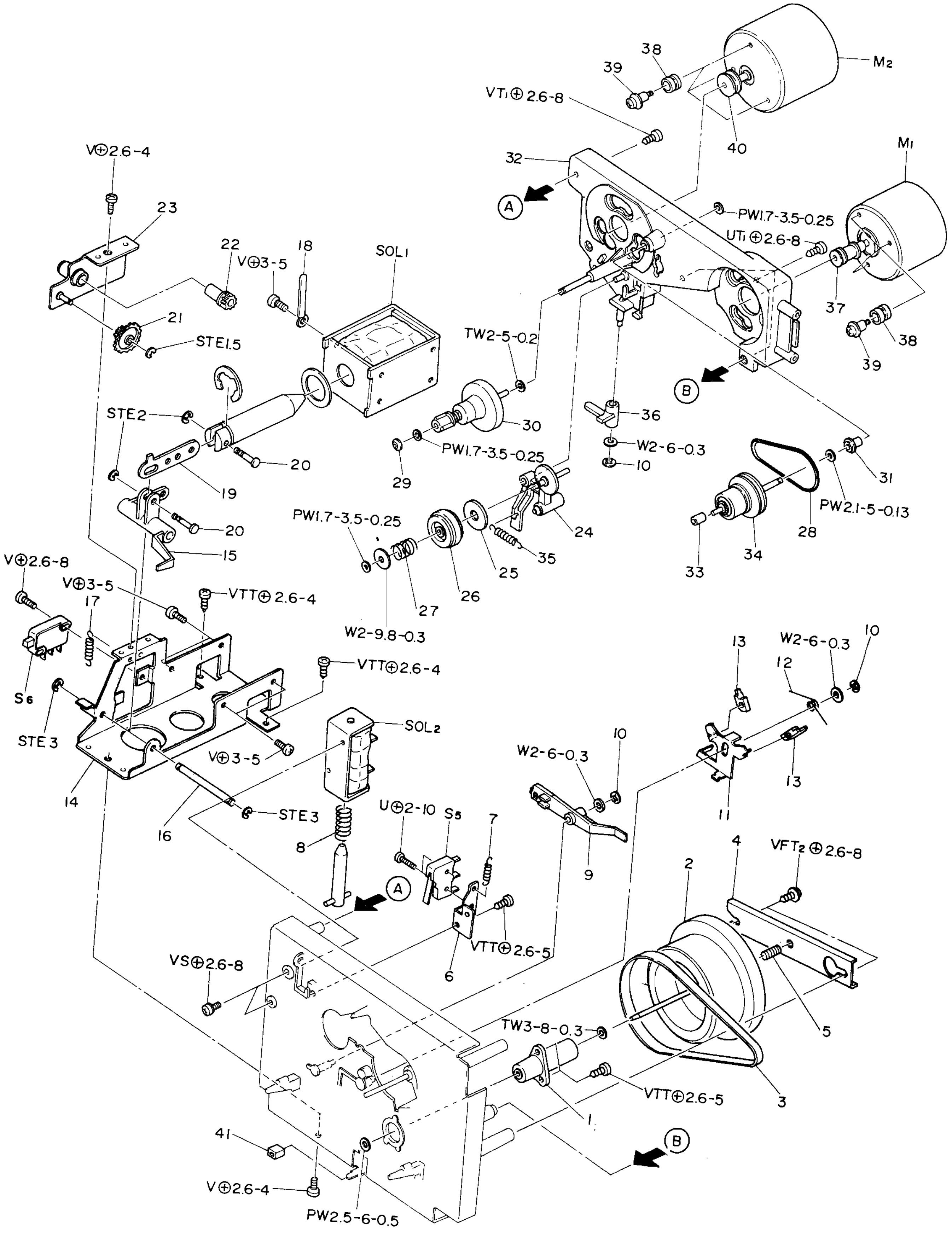
Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty	
2-1	82-160-036-01		Cover, Volume	*	1	
2-2	82-157-227-01		S-cushion, Cassette	SD-L50	1	
2-3	82-157-017-01		Deocrative sheet	SD-L50	2	
2-4	82-160-015-01		Knob, Slide switch	*	3	
2-5	87-040-134-01		Counter		1	
2-6	82-445-250-01		Rubber belt (Relay)	TPR-250	1	
2-7	82-160-034-01		Guide, LED	*	1	
2-8	82-160-221-01		S-cushion, Guide LED	*	2	
2-9	82-160-218-01		Front chassis ass'y	*	1	
2-10	82-318-025-01		Push-button, POWER	AD-M600	1	
2-11	82-304-210-01		Rod power	AD-6900	1	
2-12	82-160-207-01		Holder, Power	*	1	
2-13	82-385-383-01		Stopper rod	AD-6300	1	
2-14	82-155-008-01		Knob, Pb		1	
2-15	82-160-203-01		Amp. chassis B	*	1	
2-16	82-160-202-01		Amp. chassis A	*	1	
2-17a	82-160-039-01		Panel, Rear (H model only)	*	1	
2-17b	82-160-035-01		Panel, Rear (U model only)	*	1	
2-17c	82-160-037-01		Panel, Rear (E model only)	*	1	
2-17d	82-160-043-01		Panel, Rear (K model only)	*	1	
2-18	82-318-203-01		Holder, Circuit board	AD-M600	1	
2-19	87-084-077-01		Nylon rivet 3.5-4.5		6	
2-20	87-084-063-01		Nylon rivet 3.0—5.5		2	
2-21	82-160-018-01		Knob, REC mute	*	2	
2-22	87-085-165-01		Cord bushing (H, U model only)		1	
2-23a	87-034-826-01		AC power cord (H model only)		1	
2-23b	87-034-578-01		AC power cord (U model only)		1	
2-23c	87-034-877-01		AC power cord (E model only)		1	
2-23d	87-034-872-01		AC power cord (K model only)		1	
2-24	82-387-273-01		Holder, Jack	AD-6800	1	
2-25	82-160-021-01		Name plate, Spec. (U model only)	*	1	
2-26	82-397-244-01		Holder, AC power cord holder (E, K model only)	AD-6550	1	
2-27	87-085-166-01		Holder, AC power cord (E, K model only)		1	

EXPLODED VIEW—3


34
PW1.7-3.5-0.25
36
W2-6-0.3
STE1.5
33
TW2-5-0.2
32
37
TW2-5-0.2
PW1.7-3.5-0.25
39
B
38
31
VTT⊕2.6-5
30
28
W3-8-0.3
A
29
25
VFT2⊕2.6-6
35
B
40
41
26
24
27
22
C
D
VTT⊕2.6-5
21
STE2.3
VFT2⊕2.6-8
20
15
V⊕2-3
42
W3-8-0.3
29
18
EH
14
U⊕2-12
UTi⊕2-8
13
U⊕2-10
16
19
RPH
17
UTi⊕2-8
12
23
V⊕2.6-4
V⊕2.6-4
6
A
11
10
9
VTT⊕2.6-5
D
QT2⊕2-6
5
C
7
QT2 2-6
8
3
1
W3-8-0.5
2
STE3
STE2.3
VTT⊕2.6-5
4

Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty	
3-1	82-155-204-01		Lever, Eject		1	
3-2	82-319-220-01		Holder R ass'y		1	
3-3	82-319-230-01		E-spring, Lid		1	
3-4	82-155-215-01		E-spring, Eject lever		1	
3-5	82-392-374-01		E-spring, Pause A		1	
3-6	82-160-204-01		Cassette box ass'y	*	1	
3-7	82-541-240-01		Lever, Oil damp	TPR-950	1	
3-8	87-073-005-01		Steel ball 2φ		1	
3-9	82-155-011-01		Cassette holder L		1	
3-10	82-155-012-01		Cassette holder R		1	
3-11	82-319-223-01		Holder C box L ass'y		1	
3-12	82-303-294-01		T-spring, Holder		1	
3-13	82-319-204-01		Outsert actuating chassis ass'y		1	
3-14	82-319-210-01		Slide plate (actuating)		1	
3-15	82-319-229-01		E-spring		1	
3-16	82-392-347-01		C-spring, Head		1	
3-17	82-365-280-01		Holder, Wire		1	
3-18	82-392-357-01		C-spring, EH platform		1	
3-19	87-057-620-01		Label, Head		1	
3-20	82-319-209-01		Guide, Idler lever		1	
3-21	82-319-270-01		Pinch roller ass'y		1	
3-22	82-307-222-01		T-spring, Pinch lever	AD-6700	1	
3-23	82-397-291-01		Shield plate, Head		1	
3-24	82-319-259-01		Back tension lever ass'y		1	
3-25	82-303-382-01		Felt, Sub brake		2	
3-26	82-319-258-01		E-spring, Back tension		1	
3-27	82-319-243-01		Flange collar, Back tension		1	
3-28	82-319-235-01		Lever, P.A.C ass'y		1	
3-29	87-081-904-01		CS stopper ring		2	
3-30	82-319-215-01		P-spring, Actuating A		1	
3-31	82-215-341-01		3/32 steel ball		1	
3-32	82-303-342-01		Play idler lever ass'y		1	
3-33	82-303-274-01		Play idler ass'y		1	
3-34	82-303-325-01		E-spring, Play idler		1	
3-35	82-303-288-01		Actuating lock lever		1	
3-36	82-303-346-01		REC blocking lever		1	
3-37	82-319-214-01		P-spring, Cassette holder		1	
3-38	82-303-398-01		Cap, Take-up reel platform		1	
3-39	82-303-249-01		Take-up reel platform		1	
3-40	09-047-175-01		Main chassis ass'y	*	1	
3-41	82-160-206-01		Slide plate lock B	*	1	
3-42	82-319-211-01		Lever switch (POWER)		1	

EXPLODED VIEW-4


M2
38
39
VT1⊕2.6-8
40
32
M1
A
PW1.7-3.5-0.25
UT1⊕2.6-8
37
38
39
B
V⊕2.6-4
23
22
V⊕3-5
18
SOL1
21
STE1.5
TW2-5-0.2
STE2
30
36
W2-6-0.3
10
20
29
PW1.7-3.5-0.25
19
31
28
PW2.1-5-0.13
34
33
24
35
25
26
27
PW1.7-3.5-0.25
W2-9.8-0.3
20
15
V⊕2.6-8
V⊕3-5
17
VTT⊕2.6-4
S6
STE3
14
VTT⊕2.6-4
SOL2
V⊕3-5
16
STE3
8
U⊕2-10
S5
7
6
VTT⊕2.6-5
A
13
W2-6-0.3
10
12
13
11
W2-6-0.3
10
9
4
VFT2⊕2.6-8
2
5
3
VS⊕2.6-8
TW3-8-0.3
VTT⊕2.6-5
1
B
41
V⊕2.6-4
PW2.5-6-0.5

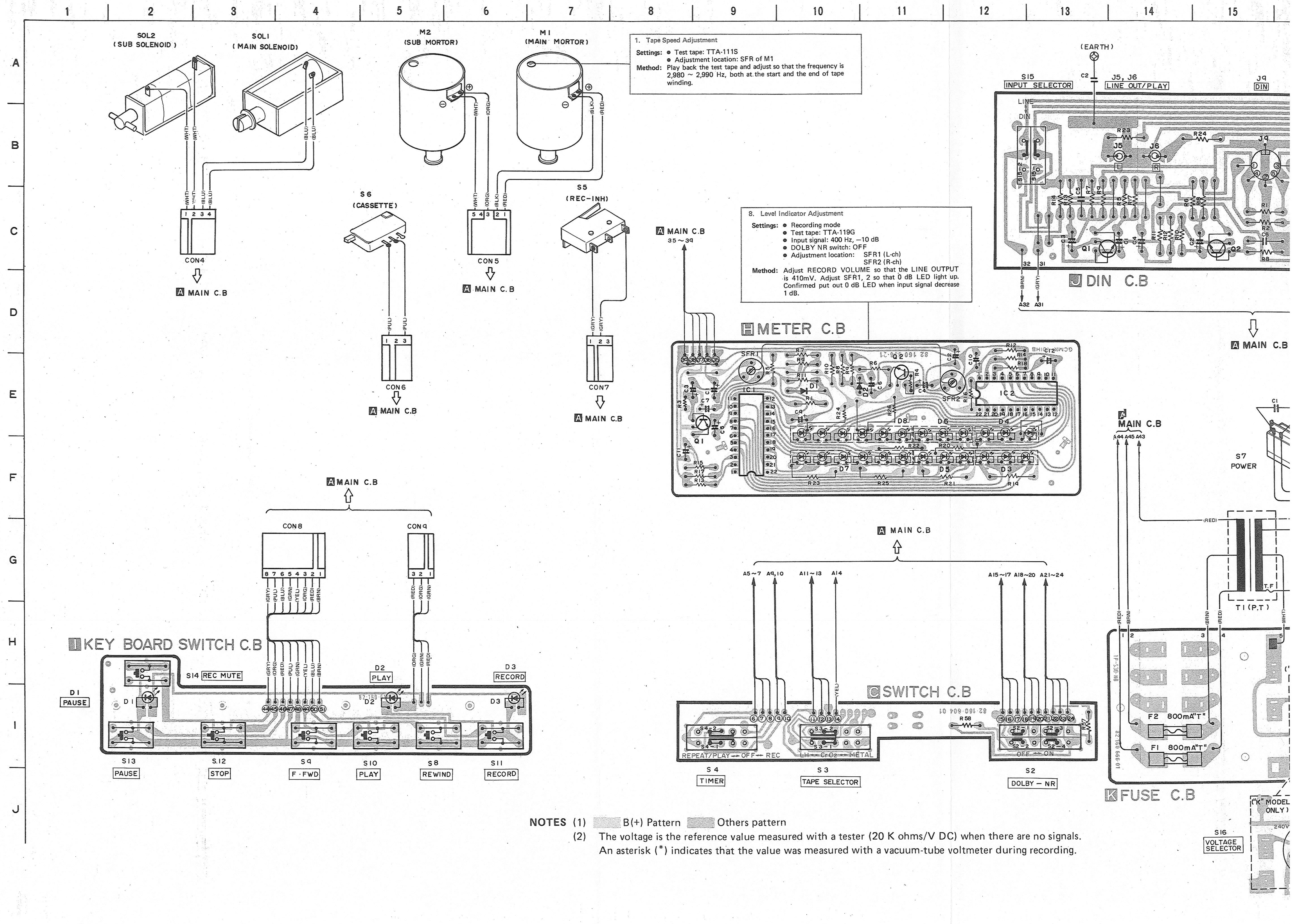
Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty	
4-1	82-392-256-01		Shaft bearing ass'y		1	
4-2	82-156-201-01		Flywheel ass'y		1	
4-3	82-319-227-01		Rubber belt, Flywheel		1	
4-4	82-319-238-01		Plate, Flywheel		1	
4-5	82-331-107-01		Thrust screw		1	
4-6	82-303-350-01		REC blocking holder		1	
4-7	82-319-234-01		E-spring, REC blocking		1	
4-8	82-481-311-01		C-spring, Plunger		1	
4-9	82-303-286-01		Brake lever		1	
4-10	87-081-903-01		CS stopper ring		3	
4-11	82-303-297-01		Brake slide plate		1	
4-12	82-303-318-01		T-spring, Brake		1	
4-13	82-439-426-01		Brake shoe A	TPR-300	2	
4-14	82-319-207-01		Holder, Solenoid		1	
4-15	82-304-232-01		Play lever	AD-6900	1	
4-16	82-304-244-01		Shaft, Play lever	AD-6900	1	
4-17	82-304-249-01		E-spring, Actuating	AD-6900	1	
4-18	87-038-039-01		Wire binder		1	
4-19	82-319-250-01		Slide plate B (PLAY)		1	
4-20	82-319-269-01		Shaft, Plunger		2	
4-21	82-319-239-01		Gear, Oil damp		1	
4-22	82-534-264-01		Gear, Oil damp		1	
4-23	82-319-225-01		Holder, Oil dmap ass'y		1	
4-24	82-303-277-01		FR lever ass'y		1	
4-25	82-303-335-01		Felt 6.4-14		1	
4-26	82-303-271-01		Idler pulley FR ass'y		1	
4-27	82-303-322-01		C-spring, FR idler		1	
4-28	82-303-385-01		Rubber belt FR (B)		1	
4-29	82-303-398-01		Cap, Take-up reel platform		1	
4-30	82-154-222-01		Supply reel platform ass'y	AD-M700	1	
4-31	82-439-410-01		Shaft bearing 2ϕ	TPR-300	1	
4-32	09-047-176-01		Sub chassis ass'y	*	1	
4-33	82-303-309-01		Rubber, Drive		1	
4-34	82-303-330-01		Slip pulley ass'y		1	
4-35	82-303-353-01		E-spring, FR lever		1	
4-36	82-303-292-01		FR lever, Eject		1	
4-37	82-156-209-01		Pulley, Motor		1	
4-38	82-439-319-01		Rubber cushion B	TPR-300	6	
4-39	87-081-483-01		Motor screw, M2.6		6	
4-40	82-319-247-01		Motor pulley, FR		1	
4-41	82-397-307-01		G-cushion, Eject lever	AD-6550	1	

ACCESSORIES/PACKAGE

Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty	
1a	82-160-856-01		Printed indiv., Packing (H,E,K model only)	*	1	
1b	82-160-854-01		Printed indiv., Packing (U model only)	*	1	
2	82-160-852-01		Cushion L, Printed indiv.	*	1	
3	82-160-853-01		Cushion R, Printed indiv.	*	1	
4	87-051-135-11		Poly-vinyl sack (for AC power cord)		1	
5	87-056-607-01		Poly-vinyl sack (for case)		1	
6a	82-160-907-01		Instructions booklet (H model only)	*	1	
6b	82-160-908-01		Instructions bookelt (U model only)	*	1	
6c	82-160-904-01		Instructions booklet (E model only)	*	1	
6d	82-160-905-01		Instructions bookelt (K model only)	*	1	
7	87-051-175-01		Poly-tube A (for instruction)		1	
8	87-056-008-11		Label, AC power cord (K model only)		1	
9	87-056-009-41		Distributors list (H,E,K model only)		1	
10	87-056-016-01		Tag, Main voltage (K model only)		1	
11	87-056-045-01		Guarantee card (U model only)		1	
12	87-056-034-01		Service station list (U model only)		1	
13	87-056-035-01		Card, Limited warranty (U model only)		1	
14	86-944-012-01		Connection cord CW-129BSK (H,U,K model only)		2	
15	86-925-015-01		Connection cord CW-115BSK (E model only)		1	
16	87-032-845-01		Siemens plug (H model only)		1	

☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ **MEMO** ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆

WIRING—2


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H I J
SOL2 (SUB SOLENOID)
SOL1 (MAIN SOLENOID)
M2 (SUB MORTOR)
M1 (MAIN MORTOR)
(WHT) (BLU) (ORG) (BLK) (RED) (PUL) (GRY) (GRN) (YEL) (BRN)
CON4
A MAIN C.B
CON5
S6 (CASSETTE)
S5 (REC-INH)
CON6
CON7
A MAIN C.B 35～39
H METER C.B
SFR1 SFR2 IC1 IC2 Q1 Q2 D1 D3 D4 D5 D6 D7 D8
(EARTH)
S15 INPUT SELECTOR
J5, J6 LINE OUT/PLAY
J9 DIN
LINE DIN
J DIN C.B
A32 A31
A MAIN C.B
A44 A45 A43
S7 POWER
T1 (P.T)
CON8
CON9
I KEY BOARD SWITCH C.B
S14 REC MUTE
D1 PAUSE
D2 PLAY
D3 RECORD
S13 PAUSE
S12 STOP
S9 F·FWD
S10 PLAY
S8 REWIND
S11 RECORD
A5～7 A9,10 A11～13 A14 A15～17 A18～20 A21～24
C SWITCH C.B
REPEAT/PLAY ← OFF → REC
LH ← CrO2 → METAL
OFF → ON
S4 TIMER
S3 TAPE SELECTOR
S2 DOLBY – NR
F2 800mA"T"
F1 800mA"T"
K FUSE C.B
("K" MODEL ONLY)
S16 VOLTAGE SELECTOR

1. Tape Speed Adjustment

Settings:
- Test tape: TTA-111S
- Adjustment location: SFR of M1

Method: Play back the test tape and adjust so that the frequency is 2,980 ~ 2,990 Hz, both at the start and the end of tape winding.

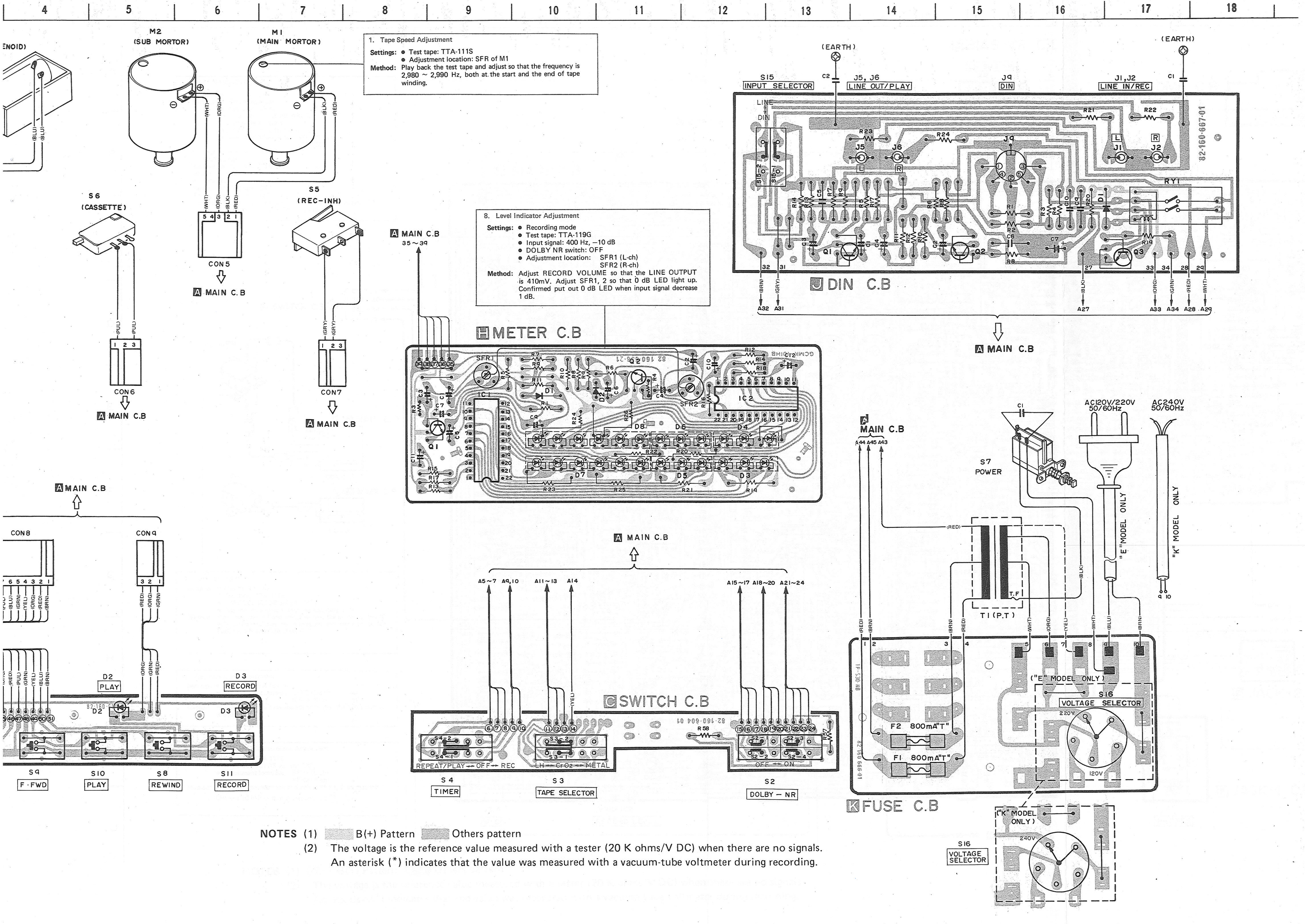
8. Level Indicator Adjustment

Settings:
- Recording mode
- Test tape: TTA-119G
- Input signal: 400 Hz, –10 dB
- DOLBY NR switch: OFF
- Adjustment location: SFR1 (L-ch)
  SFR2 (R-ch)

Method: Adjust RECORD VOLUME so that the LINE OUTPUT is 410mV. Adjust SFR1, 2 so that 0 dB LED light up. Confirmed put out 0 dB LED when input signal decrease 1 dB.

NOTES (1) ▨ B(+) Pattern ▩ Others pattern

(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals. An asterisk (*) indicates that the value was measured with a vacuum-tube voltmeter during recording.


4
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11
12
13
14
15
16
17
18
(SOLENOID)
M2
(SUB MORTOR)
M1
(MAIN MORTOR)
S6
(CASSETTE)
S5
(REC-INH)
CON5
A MAIN C.B
CON6
A MAIN C.B
CON7
A MAIN C.B
A MAIN C.B
35 ~ 39
H METER C.B
SFR1
SFR2
IC1
IC2
Q1
Q2
D1
D3
D4
D5
D6
D7
D8
(EARTH)
S15
INPUT SELECTOR
J5, J6
LINE OUT/PLAY
J9
DIN
J1, J2
LINE IN/REC
RY1
Q1
Q2
Q3
J DIN C.B
A32 A31 A27 A33 A34 A28 A29
A MAIN C.B
A MAIN C.B
CON8
CON9
D2
PLAY
D3
RECORD
S9
F·FWD
S10
PLAY
S8
REWIND
S11
RECORD
A MAIN C.B
A5~7 A9,10 A11~13 A14
A15~17 A18~20 A21~24
C SWITCH C.B
REPEAT/PLAY ↔ OFF ↔ REC
LH ↔ CrO2 ↔ METAL
OFF ↔ ON
S4
TIMER
S3
TAPE SELECTOR
S2
DOLBY – NR
A MAIN C.B
A44 A45 A43
S7
POWER
AC120V/220V
50/60Hz
AC240V
50/60Hz
"E" MODEL ONLY
"K" MODEL ONLY
T1 (P.T)
F2 800mA"T"
F1 800mA"T"
("E" MODEL ONLY)
S16
VOLTAGE SELECTOR
220V
120V
K FUSE C.B
("K" MODEL ONLY)
240V
S16
VOLTAGE SELECTOR

1. Tape Speed Adjustment

Settings:
- Test tape: TTA-111S
- Adjustment location: SFR of M1

Method: Play back the test tape and adjust so that the frequency is 2,980 ~ 2,990 Hz, both at the start and the end of tape winding.

8. Level Indicator Adjustment

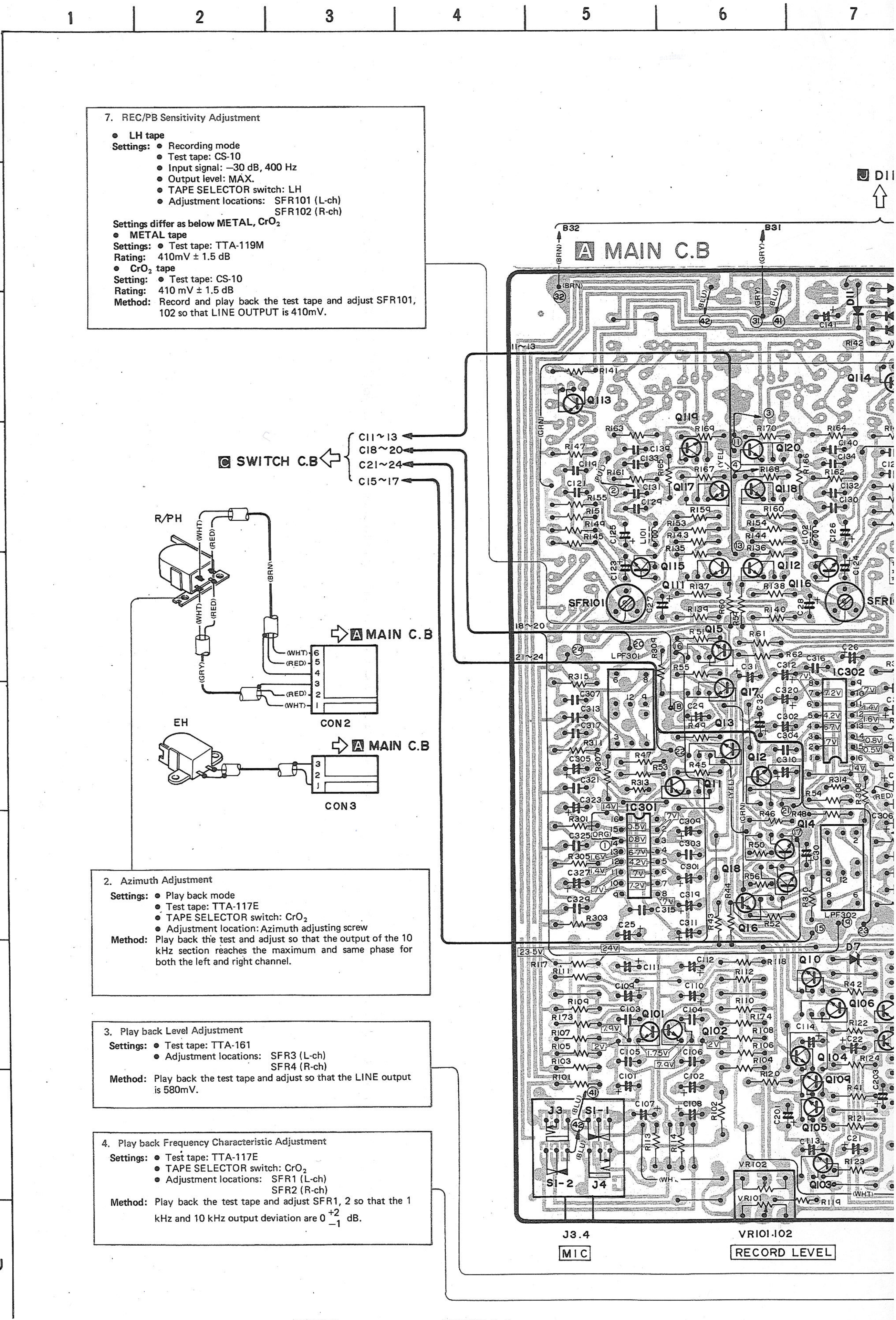
Settings:
- Recording mode
- Test tape: TTA-119G
- Input signal: 400 Hz, –10 dB
- DOLBY NR switch: OFF
- Adjustment location: SFR1 (L-ch)
  SFR2 (R-ch)

Method: Adjust RECORD VOLUME so that the LINE OUTPUT is 410mV. Adjust SFR1, 2 so that 0 dB LED light up. Confirmed put out 0 dB LED when input signal decrease 1 dB.

NOTES (1) ▨ B(+) Pattern ▨ Others pattern

(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals. An asterisk (*) indicates that the value was measured with a vacuum-tube voltmeter during recording.

WIRING–1


1
2
3
4
5
6
7
A
B
C
D
E
F
G
H
I
J
J DI
B32
B31
A MAIN C.B
C SWITCH C.B
C11~13
C18~20
C21~24
C15~17
R/PH
(WHT)
(RED)
(BRN)
(GRY)
A MAIN C.B
CON 2
EH
A MAIN C.B
CON 3
SFR101
IC301
IC302
LPF301
LPF302
J3
J4
S1-1
S1-2
VR101
VR102
J3.4
MIC
VR101.102
RECORD LEVEL

7. REC/PB Sensitivity Adjustment

- LH tape

Settings:
- Recording mode
- Test tape: CS-10
- Input signal: –30 dB, 400 Hz
- Output level: MAX.
- TAPE SELECTOR switch: LH
- Adjustment locations: SFR101 (L-ch)
  SFR102 (R-ch)

Settings differ as below METAL, CrO_2

- **METAL tape**

Settings: • Test tape: TTA-119M
Rating: 410mV ± 1.5 dB

- **CrO_2 tape**

Setting: • Test tape: CS-10
Rating: 410 mV ± 1.5 dB
Method: Record and play back the test tape and adjust SFR101, 102 so that LINE OUTPUT is 410mV.

2. Azimuth Adjustment

Settings:
- Play back mode
- Test tape: TTA-117E
- TAPE SELECTOR switch: CrO_2
- Adjustment location: Azimuth adjusting screw

Method: Play back the test and adjust so that the output of the 10 kHz section reaches the maximum and same phase for both the left and right channel.

3. Play back Level Adjustment

Settings:
- Test tape: TTA-161
- Adjustment locations: SFR3 (L-ch)
  SFR4 (R-ch)

Method: Play back the test tape and adjust so that the LINE output is 580mV.

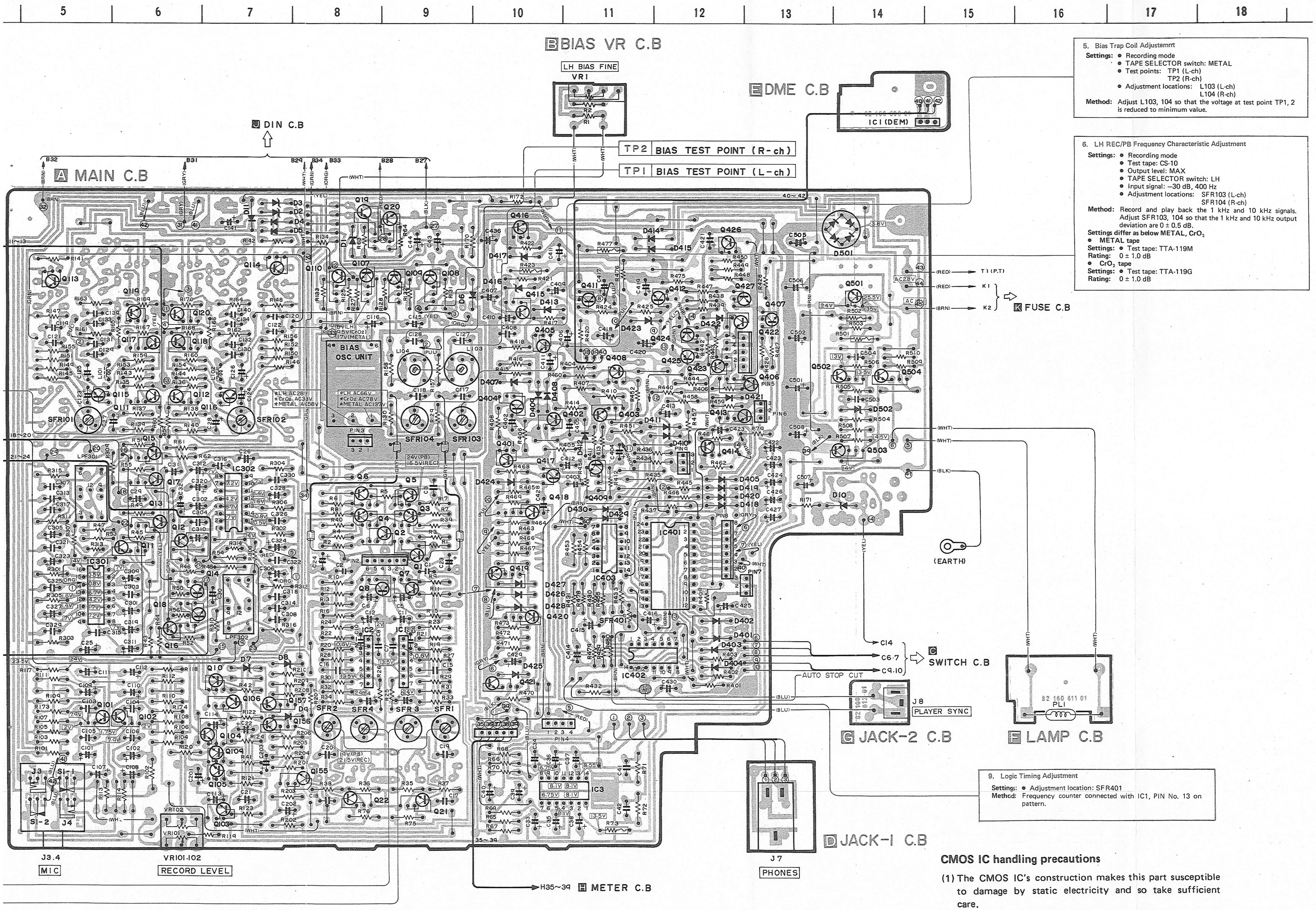
4. Play back Frequency Characteristic Adjustment

Settings:
- Test tape: TTA-117E
- TAPE SELECTOR switch: CrO_2
- Adjustment locations: SFR1 (L-ch)
  SFR2 (R-ch)

Method: Play back the test tape and adjust SFR1, 2 so that the 1 kHz and 10 kHz output deviation are 0^{+2}_{-1} dB.

NOTES (1) ▨ B(+) Pattern ▨ Others pattern

(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) whe
An asterisk (*) indicates that the value was measured with a vacuum-tube voltme


5
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14
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16
17
18
B BIAS VR C.B
LH BIAS FINE
VR1
E DME C.B
IC1 (DEM)
J DIN C.B
TP2 BIAS TEST POINT (R-ch)
TP1 BIAS TEST POINT (L-ch)
A MAIN C.B
BIAS OSC UNIT
SFR101
SFR102
SFR103
SFR104
SFR401
IC301
IC302
IC401
IC402
IC403
IC3
K FUSE C.B
T1 (P.T)
K1
K2
(EARTH)
C SWITCH C.B
AUTO STOP CUT
J8
PLAYER SYNC
G JACK-2 C.B
F LAMP C.B
PL1
D JACK-1 C.B
J7
PHONES
J3.4
MIC
VR101.102
RECORD LEVEL
H35~39 H METER C.B

5. Bias Trap Coil Adjustemnt

Settings:
- Recording mode
- TAPE SELECTOR switch: METAL
- Test points: TP1 (L-ch)
  TP2 (R-ch)
- Adjustment locations: L103 (L-ch)
  L104 (R-ch)

Method: Adjust L103, 104 so that the voltage at test point TP1, 2 is reduced to minimum value.

6. LH REC/PB Frequency Characteristic Adjustment

Settings:
- Recording mode
- Test tape: CS-10
- Output level: MAX
- TAPE SELECTOR switch: LH
- Input signal: –30 dB, 400 Hz
- Adjustment locations: SFR103 (L-ch)
  SFR104 (R-ch)

Method: Record and play back the 1 kHz and 10 kHz signals. Adjust SFR103, 104 so that the 1 kHz and 10 kHz output deviation are 0 ± 0.5 dB.

Settings differ as below METAL, CrO_2

- **METAL tape**

Settings: ● Test tape: TTA-119M

Rating: 0 ± 1.0 dB

- **CrO_2 tape**

Settings: ● Test tape: TTA-119G

Rating: 0 ± 1.0 dB

9. Logic Timing Adjustment

Settings: ● Adjustment location: SFR401

Method: Frequency counter connected with IC1, PIN No. 13 on pattern.

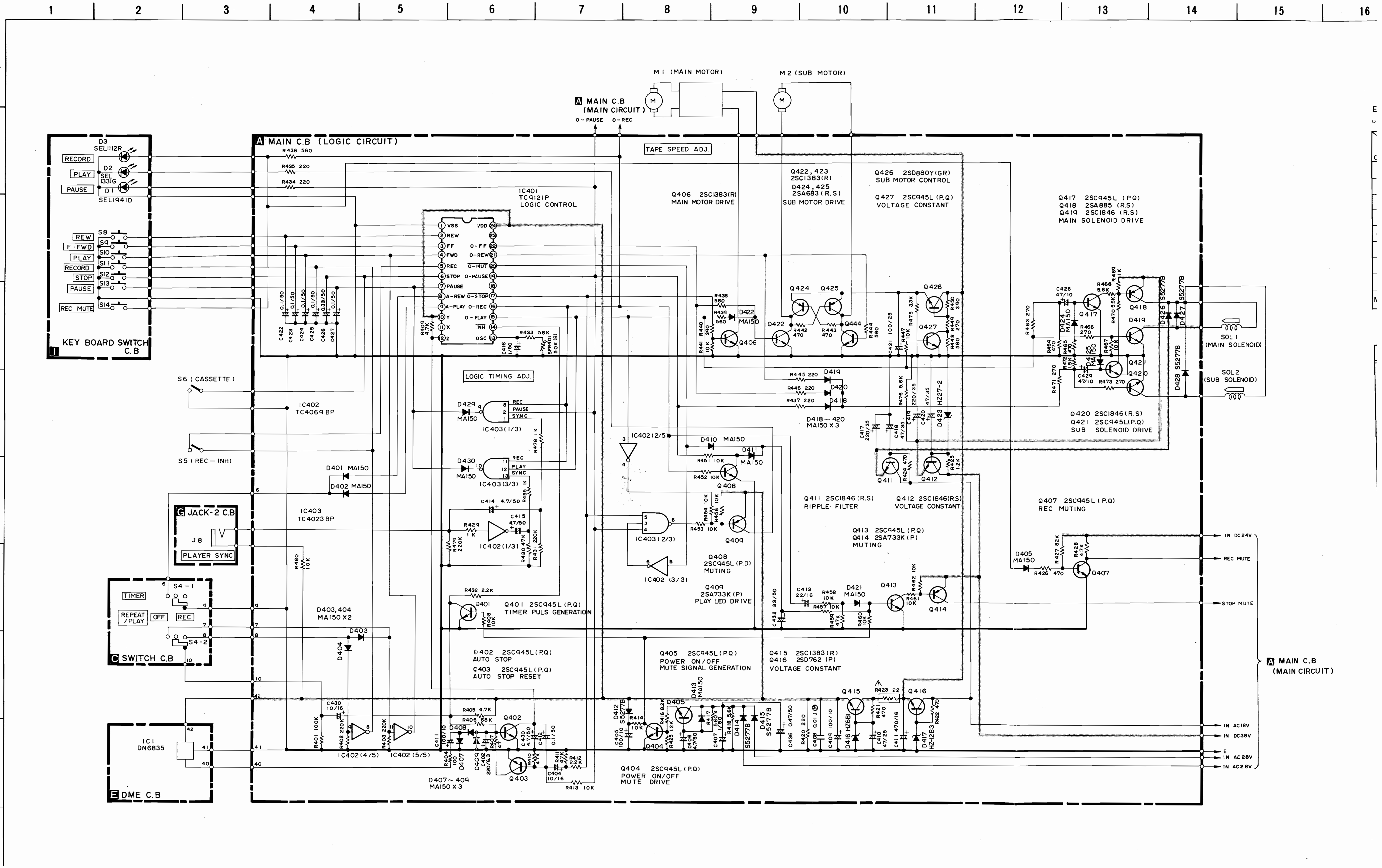
CMOS IC handling precautions

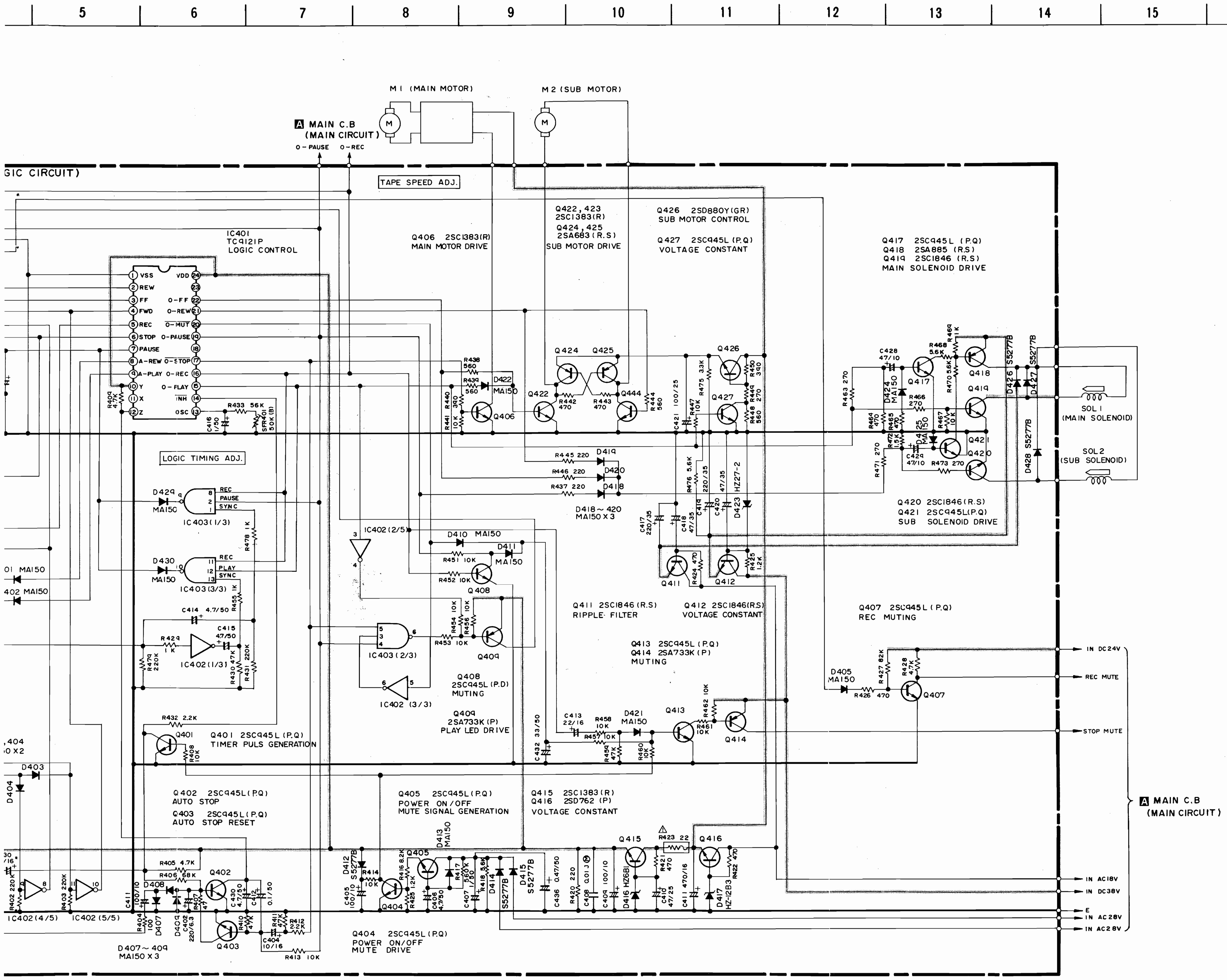
(1) The CMOS IC's construction makes this part susceptible to damage by static electricity and so take sufficient care.

(2) Do not perform a continuity test with a tester, etc. Refer to the circuit voltages of each part.

hers pattern
value measured with a tester (20 K ohms/V DC) when there are no signals.
t the value was measured with a vacuum-tube voltmeter during recording.

SCHEMATIC DIAGRAM–2


M1 (MAIN MOTOR)
M2 (SUB MOTOR)
A MAIN C.B (MAIN CIRCUIT)
O-PAUSE O-REC
A MAIN C.B (LOGIC CIRCUIT)
TAPE SPEED ADJ.
D3 SEL1112R
RECORD
PLAY
PAUSE
D2 SEL1331G
D1 SEL1941D
R436 560
R435 220
R434 220
S8 REW
S9 F·FWD
S10 PLAY
S11 RECORD
S12 STOP
S13 PAUSE
S14 REC MUTE
KEY BOARD SWITCH C.B
IC401 TC9121P LOGIC CONTROL
VSS REW FF FWD REC STOP PAUSE A-REW A-PLAY Y X Z
VDD O-FF O-REW O-MUT O-PAUSE O-STOP O-REC O-PLAY INH OSC
C422 C423 C424 C425 C426 C427
R404 4.7K
R433 56K
SFR401 50K(B)
C416
LOGIC TIMING ADJ.
Q406 2SC1383(R) MAIN MOTOR DRIVE
Q422,423 2SC1383(R)
Q424,425 2SA683(R.S) SUB MOTOR DRIVE
Q426 2SD880Y(GR) SUB MOTOR CONTROL
Q427 2SC945L(P.Q) VOLTAGE CONSTANT
Q417 2SC945L(P.Q)
Q418 2SA885(R.S)
Q419 2SC1846(R.S) MAIN SOLENOID DRIVE
R438 560 R439 560 D422 MA150
R440 390 R441 10K
Q422 Q424 Q425 Q444 R442 470 R443 470 R444 560
Q426 R475 33K R450 390 Q427 R447 10K R448 560 R449 270
C421 100/25
C428 47/10 R468 5.6K R469 1K Q417 Q418 Q419 D424 MA150 R466 270 R470 5.6K R467 10K
R463 270 R464 470 R465 1.5K R472
D425 MA150 C429 47/10 R473 270 Q421 Q420
R471 270
D426 S5277B D427 S5277B D428 S5277B
SOL1 (MAIN SOLENOID)
SOL2 (SUB SOLENOID)
Q420 2SC1846(R.S)
Q421 2SC945L(P.Q) SUB SOLENOID DRIVE
S6 (CASSETTE)
S5 (REC-INH)
IC402 TC4069BP
D429 MA150 IC403(1/3) REC PAUSE SYNC
R478 1K
D430 MA150 IC403(3/3) REC PLAY SYNC
R455 1K
C414 4.7/50 C415 47/50
R429 1K R479 220K IC402(1/3) R430 47K R431 220K
D401 MA150
D402 MA150
IC403 TC4023BP
G JACK-2 C.B J8 PLAYER SYNC
R480 10K
R445 220 D419 R446 220 D420 R437 220 D418
D418~420 MA150 X3
C417 220/35 C418 47/35 C419 C420 47/35 D423 HZ27-2
R476 5.6K R477 220/35
IC402(2/5)
D410 MA150 D411 MA150 R451 10K R452 10K Q408
Q411 R424 470 Q412 R425 1.2K
Q411 2SC1846(R.S) RIPPLE FILTER
Q412 2SC1846(R.S) VOLTAGE CONSTANT
IC403(2/3) R453 10K R454 10K R456 Q409
IC402(3/3)
Q408 2SC945L(P.D) MUTING
Q409 2SA733K(P) PLAY LED DRIVE
Q413 2SC945L(P.Q)
Q414 2SA733K(P) MUTING
Q407 2SC945L(P.Q) REC MUTING
D405 MA150 R426 470 R427 82K R428 4.7K Q407
C413 22/16 R458 10K R457 10K D421 MA150 Q413 R461 10K R462 10K Q414
R459 4.7K R460 10K C432 33/50
TIMER REPEAT/PLAY OFF REC S4-1 S4-2
C SWITCH C.B
R432 2.2K Q401
Q401 2SC945L(P.Q) TIMER PULS GENERATION
R408 10K
D403,404 MA150 X2
D403 D404
Q402 2SC945L(P.Q) AUTO STOP
Q403 2SC945L(P.Q) AUTO STOP RESET
Q405 2SC945L(P.Q) POWER ON/OFF MUTE SIGNAL GENERATION
Q415 2SC1383(R)
Q416 2SD762(P) VOLTAGE CONSTANT
IC1 DN6835
E DME C.B
C430 10/16 R401 100K R402 220K IC402(4/5) R403 220K IC402(5/5)
C411 100/10 D408 R405 4.7K R406 68K Q402
R404 100 D407 D409 C402 220/6.3 R407 C430 4.7/50 C412 0.1/50
Q403 R410 47K R411 47K R412 2.2K C404 10/16 R413 10K
D407~409 MA150 X3
D412 S5277B C405 100/10 R414 10K Q404 R415 R416 8.2K Q405 R417 2.2K C406 4.7/50
D413 MA150 C407 R418 5.6K D414 S5277B D415 S5277B
C436 4.7/50 R420 220 C408 0.01 C409 100/10 D416 HZ6B
Q415 R423 22 R421 470 C410 47/25 C411 470/16 Q416 D417 HZ-12B3 R422 470
Q404 2SC945L(P.Q) POWER ON/OFF MUTE DRIVE
IN DC24V
REC MUTE
STOP MUTE
A MAIN C.B (MAIN CIRCUIT)
IN AC18V
IN DC38V
E
IN AC28V
IN AC28V
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
A B C D E F G H I J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M 1 (MAIN MOTOR)
M 2 (SUB MOTOR)
A MAIN C.B (MAIN CIRCUIT)
0-PAUSE
0-REC
GIC CIRCUIT)
TAPE SPEED ADJ.
IC401 TC9121P LOGIC CONTROL
Q406 2SC1383(R) MAIN MOTOR DRIVE
Q422, 423 2SC1383(R)
Q424, 425 2SA683(R.S) SUB MOTOR DRIVE
Q426 2SD880Y(GR) SUB MOTOR CONTROL
Q427 2SC945L (P.Q) VOLTAGE CONSTANT
Q417 2SC945L (P.Q)
Q418 2SA885 (R.S)
Q419 2SC1846 (R.S)
MAIN SOLENOID DRIVE
VSS
VDD
REW
FF
FWD
REC
STOP
PAUSE
A-REW
A-PLAY
Y
X
Z
O-FF
O-REW
O-MUT
O-PAUSE
O-STOP
O-REC
O-PLAY
INH
OSC
R433 56K
SFR401 50K(B)
C416
R409 4.7K
LOGIC TIMING ADJ.
R438 560
R439 560
D422
MA150
R441 10K
R440 390
Q406
Q422
Q424
Q425
Q444
R442 470
R443 470
R444 560
Q426
Q427
R475 33K
R447 10K
C421 100/25
R445 220
R446 220
R437 220
D419
D420
D418
D418~420 MA150 X 3
R476 5.6K
C419 220/35
C420 47/35
HZ27-2
D423
C417 220/35
C418 47/35
Q411
Q412
R424 470
R425 1.2K
C428 47/10
R468 5.6K
R469 1K
R463 270
D424 MA150
Q417
Q418
Q419
R466 270
R470 5.6K
D426 S5277B
D427 S5277B
D428 S5277B
R464 470
R465 470
R472 1.5K
D425 MA150
R467 10K
R471 270
C424 47/10
R473 270
Q421
Q420
SOL 1 (MAIN SOLENOID)
SOL 2 (SUB SOLENOID)
Q420 2SC1846(R.S)
Q421 2SC945L(P.Q)
SUB SOLENOID DRIVE
D429 MA150
REC
PAUSE
SYNC
IC403 (1/3)
R478 1K
D430 MA150
REC
PLAY
SYNC
IC403 (3/3)
R455 1K
C414 4.7/50
R429 1K
C415 47/50
R479 220K
R430 47K
R431 220K
IC402 (1/3)
IC402 (2/5)
D410 MA150
D411 MA150
R451 10K
R452 10K
Q408
R454 10K
R456 10K
R453 10K
Q409
IC403 (2/3)
IC402 (3/3)
Q411 2SC1846(R.S) RIPPLE FILTER
Q412 2SC1846(RS) VOLTAGE CONSTANT
Q413 2SC945L (P.Q)
Q414 2SA733K (P)
MUTING
Q408 2SC945L (P.D) MUTING
Q409 2SA733K (P) PLAY LED DRIVE
Q407 2SC945L (P.Q) REC MUTING
D405 MA150
R426 470
R427 82K
R428 4.7K
Q407
IN DC24V
REC MUTE
STOP MUTE
C413 22/16
R458 10K
R457 10K
D421 MA150
Q413
R462 10K
R461 10K
Q414
R459 47K
R460 10K
C432 33/50
R432 2.2K
Q401
R408 10K
Q401 2SC945L (P.Q) TIMER PULS GENERATION
01 MA150
402 MA150
,404
X2
D403
D404
Q402 2SC945L(P.Q) AUTO STOP
Q403 2SC945L(P.Q) AUTO STOP RESET
Q405 2SC945L(P.Q) POWER ON/OFF MUTE SIGNAL GENERATION
Q415 2SC1383(R)
Q416 2SD762 (P)
VOLTAGE CONSTANT
A MAIN C.B (MAIN CIRCUIT)
D413 MA150
Q415
R423 22
Q416
R405 4.7K
R406 68K
Q402
D408
C411 100/10
R402 220K
R403 220K
IC402 (4/5)
IC402 (5/5)
R404 100
D407
D409
C402
C430
C412
R407
R410
Q403
R411
R412 2.2K
C404 10/16
R413 10K
D407~409 MA150 X 3
D412 S5277B
R414 10K
C405 100/10
R416 8.2K
R415 1.2K
Q405
Q404
C406 4.7/50
C407 1/50
R417 560
R418 5.6K
D414 S5277B
D415 S5277B
C436 0.47/50
R420 220
C409 0.01
C410 100/10
D416 HZ6B
R421 470
C410 47/25
C411 470/16
D417 HZ12B3
R422 470
IN AC18V
IN DC38V
E
IN AC28V
IN AC28V
Q404 2SC945L(P.Q) POWER ON/OFF MUTE DRIVE

Each Output Terminal Mode (Each Key Input)

○ → "High" Output

Key Input / OUTPUT		FF	REW	PLAY	REC/ PLAY	PAUSE		
						STOP→	PLAY→	REC PLAY→
0-PLAY				○	○			
0-REC					○			○
0-STOP		○	○	○	○	○	○	○
0-FF·REW		○	○					
0-PAUSE						○	○	○
0-MUT	○	○	○			○		
0-REW			○					
0-FF		○						
Mode name	Stop	Fast Forward	REWIND	Play	Record	Pause	Play Pause	Record Pause

Mode		"ON" mode Transistor
Rec/ PB Selector	PB	Q_{1}, Q_{3}, Q_{5}, Q_{6}, Q_{9}, Q_{11}, Q_{15}, Q_{103}, Q_{110}, Q_{113}, Q_{157}
	REC	Q_{7}, Q_{13}, Q_{17}, Q_{105}, Q_{113}, Q_{155}, Q_{156}
EQ Selector	LH	Q_{108}, Q_{111}, Q_{117}
	CrO₂	Q_{21}, Q_{109}, Q_{119}
	METAL	Q_{21} Q_{119}
REC Mute		Q_{113}
Stop Mute		Q_{19}, Q_{113}

ELECTRICAL MAIN PARTS LIST

≪ MAIN CIRCUIT BOARD SECTION ≫

Symbol No.	Part No.	Description
PCB-A	82-160-602-21	Main circuit board
IC1,2	87-027-182-01	IC, μPC1023H
IC3	87-027-382-01	IC, LA4170
IC301,302	87-027-381-01	IC, LM1011N
IC401	87-027-477-01	IC, TC9121P
IC402	87-027-651-01	IC, MSM4069
IC403	87-027-595-01	IC, TC4023BP
Q1,2,3,4	89-322-406-01	Transistor, 2SC2240(BL)
Q5	89-109-705-01	Transistor, 2SA970(GR)
Q6,9,10, 11,12,13, 14,15,16, 17,18,21, 22,103,104, 105,106,108, 109,110,111, 112,115,116, 117,118,119, 120,155,401, 402,403,404, 405,407,408, 413,417,421, 427,502	89-309-455-61	Transistor, 2SC945L(P,Q)
Q7,8,19, 20,113,114	89-406-555-01	Transistor, 2SD655(E)
Q101,102	89-312-222-01	Transistor, 2SC1222(E)
Q107,503, 504	89-405-712-01	Transistor, 2SD571(L)
J3,4	87-032-957-01	MIC jack ass'y w/switch (MIC)
VR101,102	82-160-630-01	Volume, 50kΩ-A (RECORD LEVEL)
SFR1,2,3,4	87-021-615-01	Semi-fixed resistor, 47kΩ-B
SFR101,102	87-021-614-01	Semi-fixed resistor, 22kΩ-B
SFR103,104	87-021-616-01	Semi-fixed resistor, 100kΩ-B
SFR401	87-021-480-01	Semi-fixed resistor, 50kΩ-B
PIN-3,6,7,9	87-032-903-01	Pin, 3P
PIN-4	87-032-904-01	Pin, 4P
PIN-5	87-032-905-01	Pin, 5P
PIN-2	87-032-906-01	Pin, 6P
PIN-8	87-032-908-01	Pin, 8P
Q406,415,422, 423	89-313-834-01	Transistor, 2SC1383(S)
Q411,412,419, 420	89-318-464-51	Transistor, 2SC1846R(S)
Q416,501	89-407-624-51	Transistor, 2SD762(PO)
Q418	89-108-854-51	Transistor, 2SA885R(S)
Q424,425	89-106-834-51	Transistor, 2SA683(RS)
Q426	89-408-804-51	Transistor, 2SD880Y(GR)
D1,2,3,7, 8,10	87-027-667-01	Zener diode, WZ075
D4,5,6,9, 11,401,402, 403,404,405, 407,408,409, 410,411,413, 418,419,420, 421,422,424, 425,429,430	87-027-219-01	Diode, MA-150
D412,414,415, 426,427,428	87-027-365-01	Diode, S5277B
D416	87-027-475-01	Zener diode, HZ6B1
D417,502	87-027-509-01	Zener diode, HZ-12B3
D423	87-027-479-01	Zener diode, HZ-272
D501	87-027-163-01	Encapsulated diode, 1B4B1
L101,102	87-005-093-01	Micro inductor coil, 4.7mH
L103,104	87-005-127-01	Coil, 22mH
BIAS OSC UNIT	82-157-641-01	Bias OSC unit
LPF301,302	87-030-061-01	Low-pass filter, 85K
		< **Resistors** >
R313,314	87-025-209-01	3.3kΩ Metal film
R23,24	88-175-684-01	680kΩ ¼w LN
⚠ R73,74,477	87-029-017-01	10Ω ¼w Fuse resistor
⚠ R502	87-029-092-01	470Ω ¼w Fuse resistor
⚠ R501	87-029-007-01	22Ω ¼w Fuse resistor
		< **Capacitors** >
C107,108,113, 114	87-015-241-01	1μF 50V Electrolytic LL
C101,102	87-015-243-01	3.3μF 50V Electrolytic LL
C5,6,13,14	87-015-246-01	4.7μF 25V Electrolytic LL
C501	87-015-641-01	1000μF 50V Electrolytic
C417,419	87-015-533-01	220μF 35V Electrolytic
C507	87-015-466-01	330μF 25V Electrolytic
C506	87-015-459-01	1000μF 25V Electrolytic
Q156,157,409, 414	89-107-335-01	Transistor, 2SA733K(P)
C411	87-015-477-01	470μF 16V Electrolytic
C19,20	87-014-049-01	470pF PP

≪ BIAS VOLUME CIRCUIT BOARD SECTION ≫

Symbol No.	Part No.	Description
PCB-B	82-160-608-11	Bias volume circuit board
VR1	82-160-665-01	Volume, 5kΩ-K (LH BIAS FINE)

≪ SWITCH CIRCUIT BOARD SECTION ≫

Symbol No.	Part No.	Description
PCB-C	82-160-604-01	Switch circuit board
S2	82-160-629-01	Slide switch (DOLBY-NR)
S3,4	82-160-628-01	Slide switch (TAPE SELECTOR, TIMER)

≪ JACK-1 CIRCUIT BOARD SECTION ≫

Symbol No.	Part No.	Description
PCB-D	82-160-605-11	Jack-1 circuit board
J7	87-032-983-01	Jack, 6.3φ (PHONES)

≪ DME CIRCUIT BOARD SECTION ≫

Symbol No.	Part No.	Description
PCB-E	82-160-606-01	DME circuit board
IC1	87-027-478-01	IC, DN6835

≪ LAMP CIRCUIT BOARD SECTION ≫

Symbol No.	Part No.	Description
PCB-F	82-160-611-11	Lamp circuit board
PL1	82-160-632-01	Pilot lamp 50mA, 15V

≪ JACK-2 CIRCUIT BOARD SECTION ≫

Symbol No.	Part No.	Description
PCB-G	82-160-612-01	Jack-2 circuit board
J8	87-032-882-01	Jack, 2.5φ (PLAYER SYNC)

≪ METER CIRCUIT BOARD SECTION ≫

Symbol No.	Part No.	Description
PCB-H	82-160-636-11	Meter circuit board
IC1,2	87-027-594-01	IC, 2E05
Q1,2	89-309-455-61	Transistor, 2SC945L(P,Q)
D1,2	88-051-060-01	Diode, 1N60
D3,4	87-027-653-01	LED, LN03202P
D5,6	87-027-654-01	LED, LN03402P
D7,8	87-027-655-01	LED, LN06302P
SFR1,2	87-021-615-01	Semi-fixed resistor, 47kΩ-B
		< **Resistor** >
R19,20,21, 22,23,24, 25,26	87-025-112-01	220Ω 1w Metal film

≪ KEY BOARD SWITCH CIRCUIT BOARD SECTION ≫

Symbol No.	Part No.	Description
PCB-I	82-160-614-11	Key board switch circuit board
D1	87-027-647-01	LED, SEL19410(PAUSE)
D2	87-027-648-01	LED, SEL1331G(PLAY)
D3	87-027-646-01	LED, SEL1112R(RECORD)
S8,9,10,11, 12,13,14	86-992-604-01	Push-switch (REWIND, STOP, PAUSE, REC MUTE)
CON-9	82-160-618-01	3P connector ass'y
CON-8	82-160-619-01	8P connector ass'y

≪ DIN CIRCUIT BOARD SECTION ≫

Symbol No.	Part No.	Description
PCB J	82-160-667-01	DIN circuit board
Q1,2	89-312-222-01	Transistor, 2SC1222(E)
Q3,4	89-309-409-01	Transistor, 2SC945L(P)
D1	87-027-097-01	Diode, 1S1555
J1,2,5,6,9	87-038-053-01	Jack board ass'y (LINE IN/REC, LINE OUT/ PLAY, DIN)
RY1	87-045-152-01	Reed relay HA224N

≪ FUSE CIRCUIT BOARD SECTION ≫

Symbol No.	Part No.	Description
⚠ PCB K	82-160-666-01	Fuse circuit board
⚠ S16	87-031-591-01	Rotary switch (VOLTAGE SELECTOR) (E model only)
⚠ S16	87-031-542-01	Rotary switch (VOLTAGE SELECTOR) (K model only)
⚠ F1,2	87-035-221-01	Fuse, "T" 800mA
⚠	87-098-015-01	Fuse label, "T" 800mA
⚠	87-033-147-01	Fuse clamp

≪ MISCELLANEOUS ≫

Symbol No.	Part No.	Description
⚠ T1	82-160-625-01	Power transformer
RPH	87-046-185-01	REC/PB head
EH	87-046-176-01	Erase head
M1	87-045-135-01	Motor, DC EG (MAIN)
M2	82-319-617-01	DC motor (SUB)
SOL1	82-160-633-01	Solenoid (MAIN)
SOL2	82-304-640-11	Solenoid (SUB)
S5	82-319-613-01	Micro switch (REC-INH)
S6	82-304-724-01	Micro switch (CASSETTE)
S7	87-031-467-01	Push-switch (POWER)
	82-160-637-01	Jumper reed, 5P
	82-160-638-01	Jumper reed, 8P
	87-032-965-01	Jumper connector, 5P
	82-304-656-01	Heatsink
⚠	87-033-140-01	Splice connector
⚠	87-034-877-01	AC power cord (E model only)
⚠	87-034-872-01	AC power cord (K model only)
⚠	87-085-166-01	Holder, AC power cord
	82-160-645-01	Ribbon cable, 3P
	82-160-646-01	Ribbon cable, 3P
	82-160-646-01	Ribbon cable, 2P
	82-160-648-01	Ribbon cable, 3P
	82-160-649-01	Ribbon cable, 3P

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Symbol No.	Part No.	Description
D416	87-027-475-01	Zener diode, HZ6B1
D417,502	87-027-509-01	Zener diode, HZ-12B3
D423	87-027-479-01	Zener diode, HZ-272
D501	87-027-163-01	Encapsulated diode, 1B4B1
L101,102	87-005-093-01	Micro inductor coil, 4.7mH
L103,104	87-005-127-01	Coil, 22mH
BIAS OSC UNIT	82-157-641-01	Bias OSC unit
LPF301,302	87-030-061-01	Low-pass filter, 85K
		< **Resistors** >
R313,314	87-025-209-01	3.3kΩ Metal film
R23,24	88-175-684-01	680kΩ ¼w LN
⚠ R73,74,477	87-029-017-01	10Ω ¼w Fuse resistor
⚠ R502	87-029-092-01	470Ω ¼w Fuse resistor
⚠ R501	87-029-007-01	22Ω ¼w Fuse resistor
		< **Capacitors** >
C107,108,113, 114	87-015-241-01	1μF 50V Electrolytic LL
C101,102	87-015-243-01	3.3μF 50V Electrolytic LL
C5,6,13,14	87-015-246-01	4.7μF 25V Electrolytic LL
C501	87-015-641-01	1000μF 50V Electrolytic
C417,419	87-015-533-01	220μF 35V Electrolytic
C507	87-015-466-01	330μF 25V Electrolytic
C506	87-015-459-01	1000μF 25V Electrolytic
Q156,157,409, 414	89-107-335-01	Transistor, 2SA733K(P)
C411	87-015-477-01	470μF 16V Electrolytic
C19,20	87-014-049-01	470pF PP

≪ BIAS VOLUME CIRCUIT BOARD SECTION ≫

PCB-B	82-160-608-11	Bias volume circuit board
VR1	82-160-665-01	Volume, 5kΩ-K (LH BIAS FINE)

≪ SWITCH CIRCUIT BOARD SECTION ≫

PCB-C	82-160-604-01	Switch circuit board
S2	82-160-629-01	Slide switch (DOLBY-NR)
S3,4	82-160-628-01	Slide switch (TAPE SELECTOR, TIMER)

≪ JACK-1 CIRCUIT BOARD SECTION ≫

PCB-D	82-160-605-11	Jack-1 circuit board
J7	87-032-983-01	Jack, 6.3φ (PHONES)

≪ DME CIRCUIT BOARD SECTION ≫

PCB-E	82-160-606-01	DME circuit board
IC1	87-027-478-01	IC, DN6835

≪ LAMP CIRCUIT BOARD SECTION ≫

PCB-F	82-160-611-11	Lamp circuit board
PL1	82-160-632-01	Pilot lamp 50mA, 15V

≪ JACK-2 CIRCUIT BOARD SECTION ≫

PCB-G	82-160-612-01	Jack-2 circuit board
J8	87-032-882-01	Jack, 2.5φ (PLAYER SYNC)

≪ METER CIRCUIT BOARD SECTION ≫

PCB-H	82-160-636-11	Meter circuit board
IC1,2	87-027-594-01	IC, 2E05
Q1,2	89-309-455-61	Transistor, 2SC945L(P,Q)
D1,2	88-051-060-01	Diode, 1N60
D3,4	87-027-653-01	LED, LN03202P

Symbol No.	Part No.	Description
D5,6	87-027-654-01	LED, LN03402P
D7,8	87-027-655-01	LED, LN06302P
SFR1,2	87-021-615-01	Semi-fixed resistor, 47kΩ-B
		< **Resistor** >
R19,20,21, 22,23,24, 25,26	87-025-112-01	220Ω 1w Metal film

≪ KEY BOARD SWITCH CIRCUIT BOARD SECTION ≫

PCB-I	82-160-614-11	Key board switch circuit board
D1	87-027-647-01	LED, SEL19410(PAUSE)
D2	87-027-648-01	LED, SEL1331G(PLAY)
D3	87-027-646-01	LED, SEL1112R(RECORD)
S8,9,10,11, 12,13,14	86-992-604-01	Push-switch (REWIND, STOP, PAUSE, REC MUTE)
CON-9	82-160-618-01	3P connector ass'y
CON-8	82-160-619-01	8P connector ass'y

≪ DIN CIRCUIT BOARD SECTION ≫

PCB J	82-160-667-01	DIN circuit board
Q1,2	89-312-222-01	Transistor, 2SC1222(E)
Q3,4	89-309-409-01	Transistor, 2SC945L(P)
D1	87-027-097-01	Diode, 1S1555
J1,2,5,6,9	87-038-053-01	Jack board ass'y (LINE IN/REC, LINE OUT/ PLAY, DIN)
RY1	87-045-152-01	Reed relay HA224N

≪ FUSE CIRCUIT BOARD SECTION ≫

⚠ PCB K	82-160-666-01	Fuse circuit board
⚠ S16	87-031-591-01	Rotary switch (VOLTAGE SELECTOR) (E model only)
⚠ S16	87-031-542-01	Rotary switch (VOLTAGE SELECTOR) (K model only)
⚠ F1,2	87-035-221-01	Fuse, "T" 800mA
⚠	87-098-015-01	Fuse label, "T" 800mA
⚠	87-033-147-01	Fuse clamp

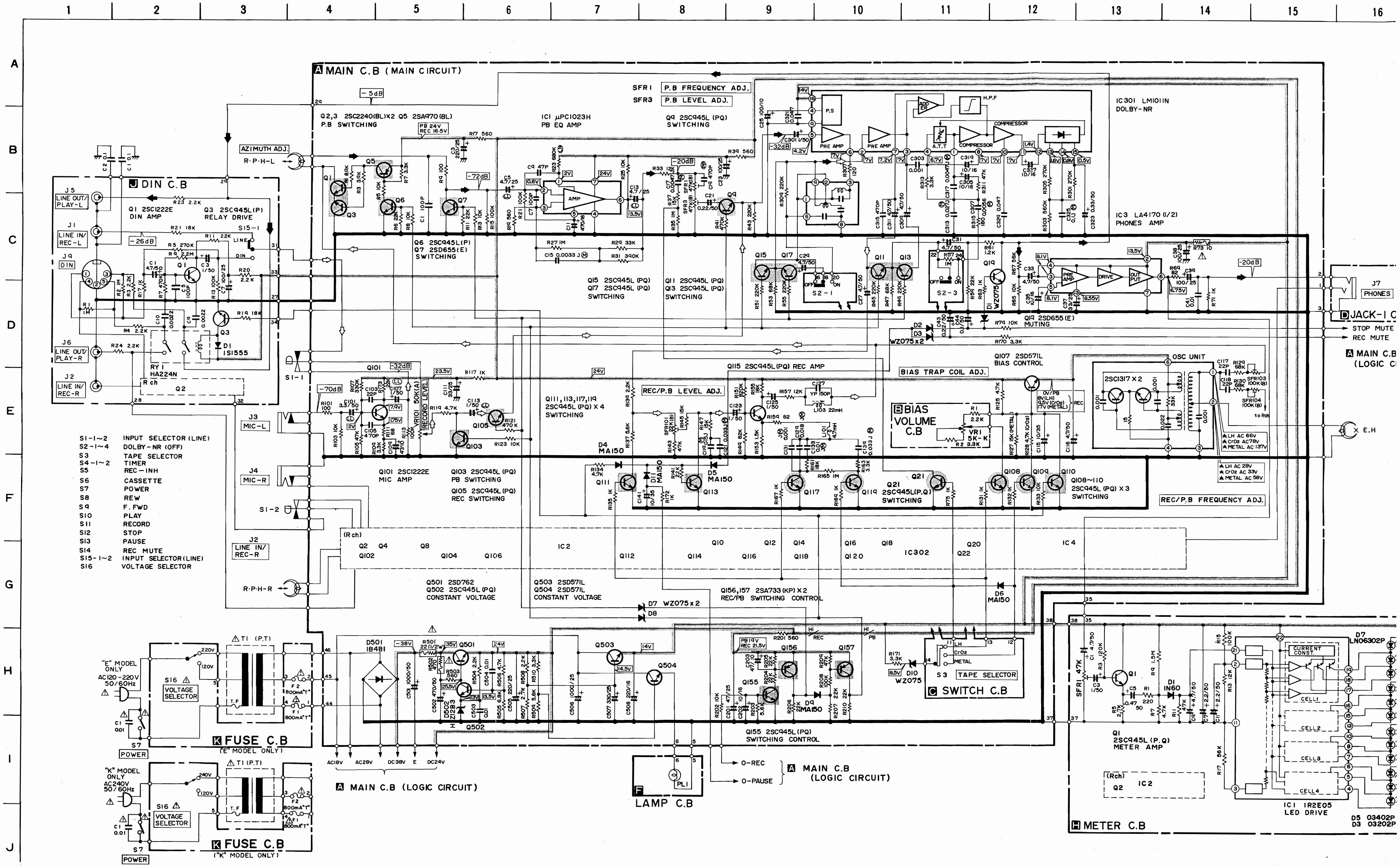
≪ MISCELLANEOUS ≫

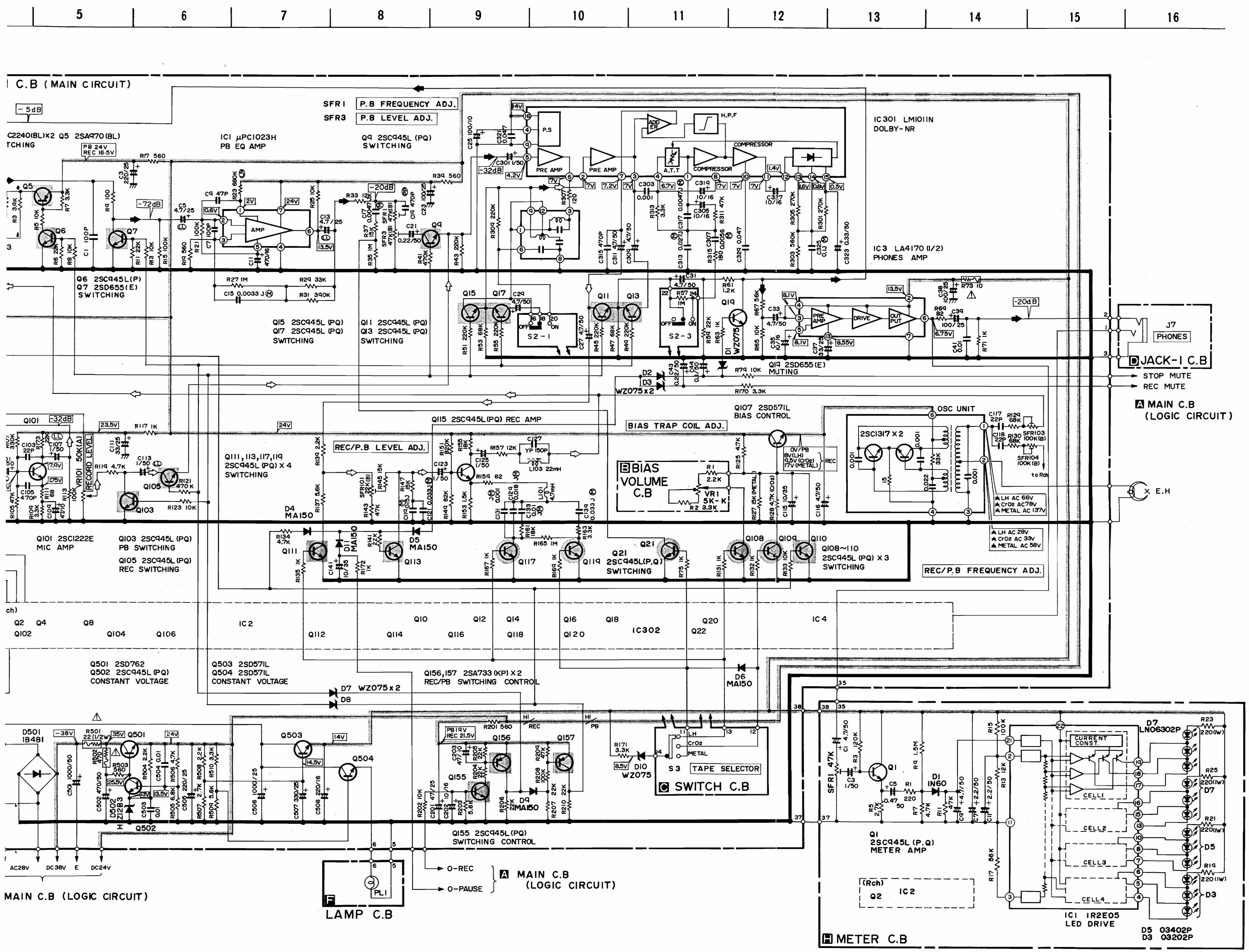
⚠ T1	82-160-625-01	Power transformer
RPH	87-046-185-01	REC/PB head
EH	87-046-176-01	Erase head
M1	87-045-135-01	Motor, DC EG (MAIN)
M2	82-319-617-01	DC motor (SUB)
SOL1	82-160-633-01	Solenoid (MAIN)
SOL2	82-304-640-11	Solenoid (SUB)
S5	82-319-613-01	Micro switch (REC-INH)
S6	82-304-724-01	Micro switch (CASSETTE)
S7	87-031-467-01	Push-switch (POWER)
	82-160-637-01	Jumper reed, 5P
	82-160-638-01	Jumper reed, 8P
	87-032-965-01	Jumper connector, 5P
	82-304-656-01	Heatsink
⚠	87-033-140-01	Splice connector
⚠	87-034-877-01	AC power cord (E model only)
⚠	87-034-872-01	AC power cord (K model only)
⚠	87-085-166-01	Holder, AC power cord
	82-160-645-01	Ribbon cable, 3P
	82-160-646-01	Ribbon cable, 3P
	82-160-646-01	Ribbon cable, 2P
	82-160-648-01	Ribbon cable, 3P
	82-160-649-01	Ribbon cable, 3P

Symbol No.	Part No.	Description
	82-160-650-01	Ribbon cable, 4P
	82-160-651-01	Ribbon cable, 3P
	82-160-652-01	Ribbon cable, 3P
CON-3	82-160-617-01	3P connector ass'y
CON-6	82-160-639-01	3P connector ass'y
CON-7	82-160-640-01	3P connector ass'y
CON-4	82-160-643-01	4P connector ass'y
CON-5	82-160-641-01	5P connector ass'y
CON-2	82-160-615-01	6P connector ass'y
		< **Capacitor** >
⚠ C1	87-019-104-01	0.01μF Ceramic

⚠ This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.

SCHEMATIC DIAGRAM-1


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
A B C D E F G H I J
A MAIN C.B (MAIN CIRCUIT)
SFR1 P.B FREQUENCY ADJ.
SFR3 P.B LEVEL ADJ.
Q2,3 2SC2240(BL)X2 Q5 2SA970(BL)
P.B SWITCHING
IC1 μPC1023H
PB EQ AMP
Q9 2SC945L (PQ)
SWITCHING
IC301 LM1011N
DOLBY-NR
AZIMUTH ADJ.
R·P·H-L
J DIN C.B
Q1 2SC1222E
DIN AMP
Q3 2SC945L(P)
RELAY DRIVE
J5 LINE OUT/ PLAY-L
J1 LINE IN/ REC-L
J9 DIN
J6 LINE OUT/ PLAY-R
J2 LINE IN/ REC-R
RY1 HA224N
D1 1S1555
Q6 2SC945L(P)
Q7 2SD655(E)
SWITCHING
Q15 2SC945L (PQ)
Q17 2SC945L (PQ)
SWITCHING
Q11 2SC945L (PQ)
Q13 2SC945L (PQ)
SWITCHING
IC3 LA4170 (1/2)
PHONES AMP
PRE AMP
ADD ER
H.P.F
A.T.T
COMPRESSOR
DRIVE
OUT PUT
Q19 2SD655(E)
MUTING
J7 PHONES
D JACK-1 C
STOP MUTE
REC MUTE
A MAIN C.B (LOGIC CIRCUIT)
Q107 2SD571L
BIAS CONTROL
BIAS TRAP COIL ADJ.
OSC UNIT
2SC1317 X 2
Q115 2SC945L(PQ) REC AMP
REC/P.B LEVEL ADJ.
B BIAS VOLUME C.B
Q111,113,117,119
2SC945L (PQ) X 4
SWITCHING
Q101 2SC1222E
MIC AMP
Q103 2SC945L (PQ)
PB SWITCHING
Q105 2SC945L(PQ)
REC SWITCHING
J3 MIC-L
J4 MIC-R
S1-1
S1-2
Q21 2SC945L(P.Q)
SWITCHING
Q108~110
2SC945L (PQ) X 3
SWITCHING
REC/P.B FREQUENCY ADJ.
★LH AC 66V
★CrO2 AC 76V
★METAL AC 137V
★LH AC 28V
★CrO2 AC 33V
★METAL AC 56V
E.H
S1-1~2 INPUT SELECTOR (LINE)
S2-1~4 DOLBY-NR (OFF)
S3 TAPE SELECTOR
S4-1~2 TIMER
S5 REC-INH
S6 CASSETTE
S7 POWER
S8 REW
S9 F.FWD
S10 PLAY
S11 RECORD
S12 STOP
S13 PAUSE
S14 REC MUTE
S15-1~2 INPUT SELECTOR (LINE)
S16 VOLTAGE SELECTOR
(Rch)
Q2 Q4 Q8 IC2 Q10 Q12 Q14 Q16 Q18 Q20 IC4
Q102 Q104 Q106 Q112 Q114 Q116 Q118 Q120 IC302 Q22
R·P·H-R
Q501 2SD762
Q502 2SC945L (PQ)
CONSTANT VOLTAGE
Q503 2SD571L
Q504 2SD571L
CONSTANT VOLTAGE
Q156,157 2SA733 (KP) X 2
REC/PB SWITCHING CONTROL
D7 WZ075 x 2
D8
D6 MA150
D501 1B4B1
D502 ZJ2B3
Q155 2SC945L(PQ)
SWITCHING CONTROL
D10 WZ075
S3 TAPE SELECTOR
C SWITCH C.B
LH CrO2 METAL
"E" MODEL ONLY
AC120-220V 50/60Hz
S16 VOLTAGE SELECTOR
T1 (P.T)
220V 120V
F2 800mA"T"
F1 800mA"T"
K FUSE C.B
("E" MODEL ONLY)
S7 POWER
"K" MODEL ONLY
AC240V 50/60Hz
240V 120V
K FUSE C.B
("K" MODEL ONLY)
AC18V AC28V DC38V E DC24V
A MAIN C.B (LOGIC CIRCUIT)
F LAMP C.B
PL1
O-REC
O-PAUSE
A MAIN C.B (LOGIC CIRCUIT)
Q1 2SC945L (P.Q)
METER AMP
D1 1N60
(Rch) Q2 IC2
IC1 IR2E05
LED DRIVE
CURRENT CONST
CELL1 CELL2 CELL3 CELL4
D7 LN06302P
D5 03402P
D3 03202P
H METER C.B
D2 D3 WZ075 x 2
D4 MA150
D5 MA150
D9 MA150
-5dB -26dB -32dB -20dB -72dB -70dB
PB 24V REC 16.5V
PB 19V REC 21.5V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14
15
16
C.B (MAIN CIRCUIT)
SFR1 P.B FREQUENCY ADJ.
SFR3 P.B LEVEL ADJ.
IC1 μPC1023H PB EQ AMP
Q9 2SC945L (PQ) SWITCHING
IC301 LM1011N DOLBY-NR
PRE AMP
PRE AMP
A.T.T
COMPRESSOR
H.P.F
P.S
IC3 LA4170 (1/2) PHONES AMP
Q6 2SC945L(P)
Q7 2SD655(E)
SWITCHING
Q15 2SC945L (PQ)
Q17 2SC945L (PQ)
SWITCHING
Q11 2SC945L (PQ)
Q13 2SC945L (PQ)
SWITCHING
S2-1
S2-3
PRE AMP
DRIVE
OUT PUT
J7 PHONES
D JACK-1 C.B
Q19 2SD655(E) MUTING
STOP MUTE
REC MUTE
A MAIN C.B (LOGIC CIRCUIT)
Q115 2SC945L(PQ) REC AMP
REC/P.B LEVEL ADJ.
BIAS TRAP COIL ADJ.
Q107 2SD571L BIAS CONTROL
OSC UNIT
2SC1317 x 2
B BIAS VOLUME C.B
VR1 5K-K
E.H
Q111,113,117,119 2SC945L (PQ) x 4 SWITCHING
Q101 2SC1222E MIC AMP
Q103 2SC945L (PQ) PB SWITCHING
Q105 2SC945L (PQ) REC SWITCHING
Q21 2SC945L(P.Q) SWITCHING
Q108~110 2SC945L (PQ) x 3 SWITCHING
REC/P.B FREQUENCY ADJ.
VR101 50K(A) RECORD LEVEL
Q501 2SD762
Q502 2SC945L (PQ) CONSTANT VOLTAGE
Q503 2SD571L
Q504 2SD571L CONSTANT VOLTAGE
Q156,157 2SA733 (KP) x 2 REC/PB SWITCHING CONTROL
D7 WZ075 x 2
D6 MA150
D501 1B481
Q155 2SC945L(PQ) SWITCHING CONTROL
O-REC
O-PAUSE
A MAIN C.B (LOGIC CIRCUIT)
F LAMP C.B
PL1
S3 TAPE SELECTOR
C SWITCH C.B
D10 WZ075
LH
CrO2
METAL
Q1 2SC945L (P.Q) METER AMP
IC1 IR2E05 LED DRIVE
D7 LN06302P
D5 03402P
D3 03202P
CURRENT CONST
CELL1
CELL2
CELL3
CELL4
(Rch) Q2 IC2
H METER C.B
AC28V DC38V E DC24V
MAIN C.B (LOGIC CIRCUIT)

NOTES:

1) ▬ B (+) power supply

2) ➡ Signal path

⇨ Rec path

3) The voltage is the reference value measured with a tester (20 k-ohms/V DC) when there are no signals. But (   ) is with recording. An asterisk (*) indicates that the value was measured with a vacuum-tube voltmeter during recording.

4) Resistors with no designation have a rated power of ¼W and a tolerance of ±5%.

5) Capacitors with no designation have a dielectric strength of less than 50WV.

6) The only capacitor tolerances indicated are ±5% (J) and ±10% (K).

7) Ceramic capacitor symbols:

For temperature compensation (SL)

High dielectric constant system (YY)

High dielectric constant system (YW, YP, YZ)

8) Explanation of symbols

Ⓜ Mylar capacitor

Ⓟ Polypropylene film capacitor

Ⓛ Low-leakage capacitor

Fuse resistor

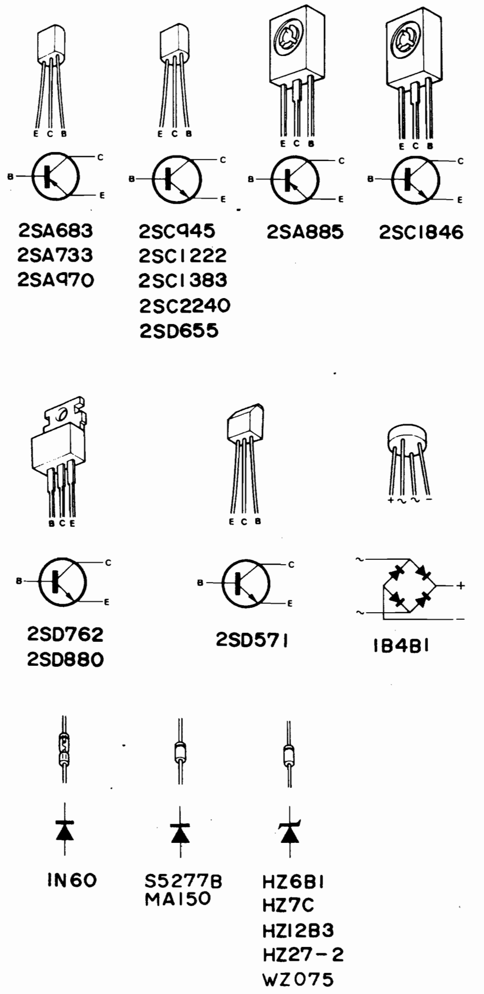
▨ REC/PB Transistor switch

● TAPE SELECTOR Transistor switch

⚠ Safety component symbol

This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.

- This schematic diagram is subject to change without notice in the interests of improved performance.


E C B
2SA683
2SA733
2SA970
2SC945
2SC1222
2SC1383
2SC2240
2SD655
2SA885
2SC1846
B C E
2SD762
2SD880
2SD571
1B481
IN60
S5277B
MA150
HZ6B1
HZ7C
HZ12B3
HZ27-2
WZ075

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